Fig. 1

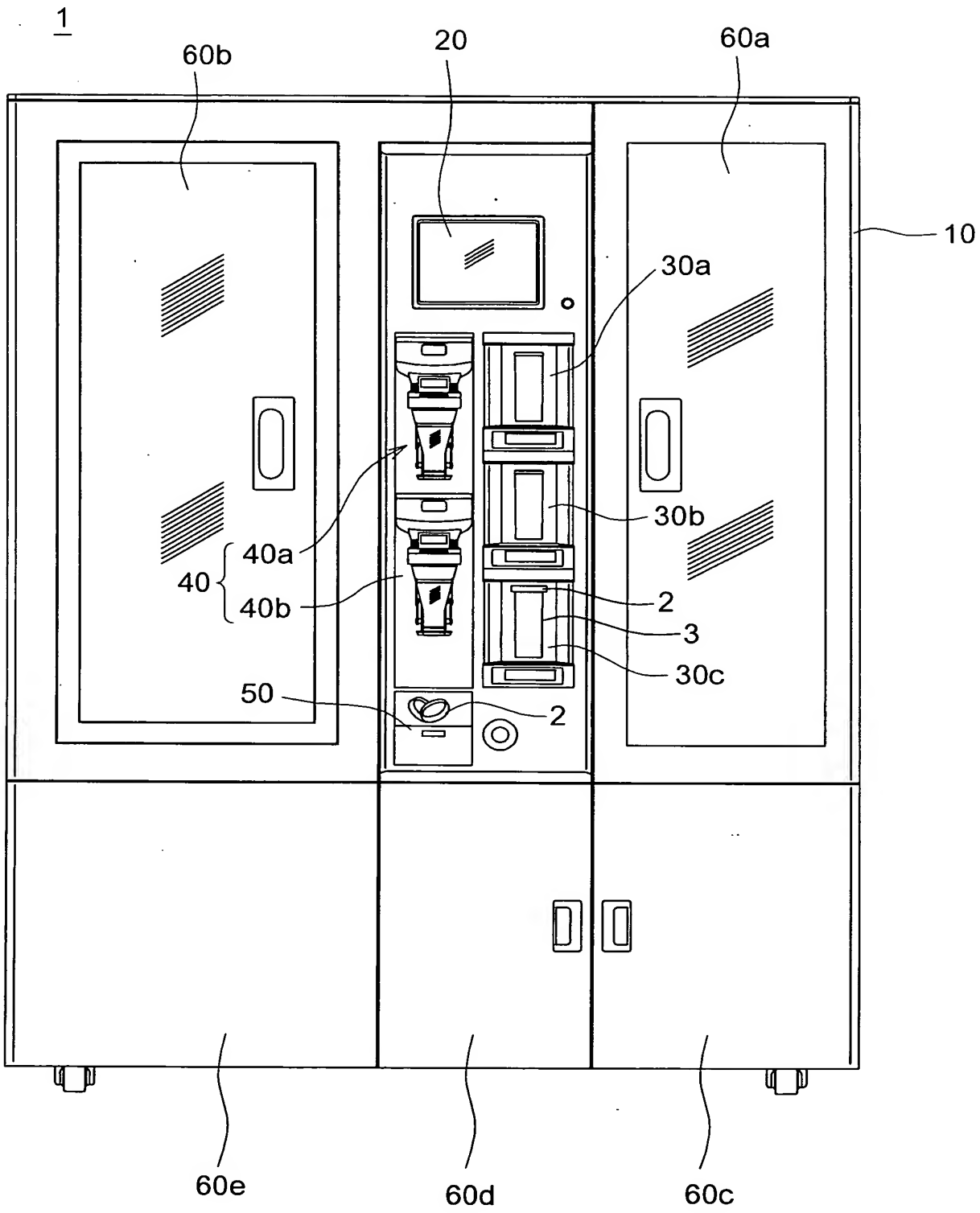


Fig.2

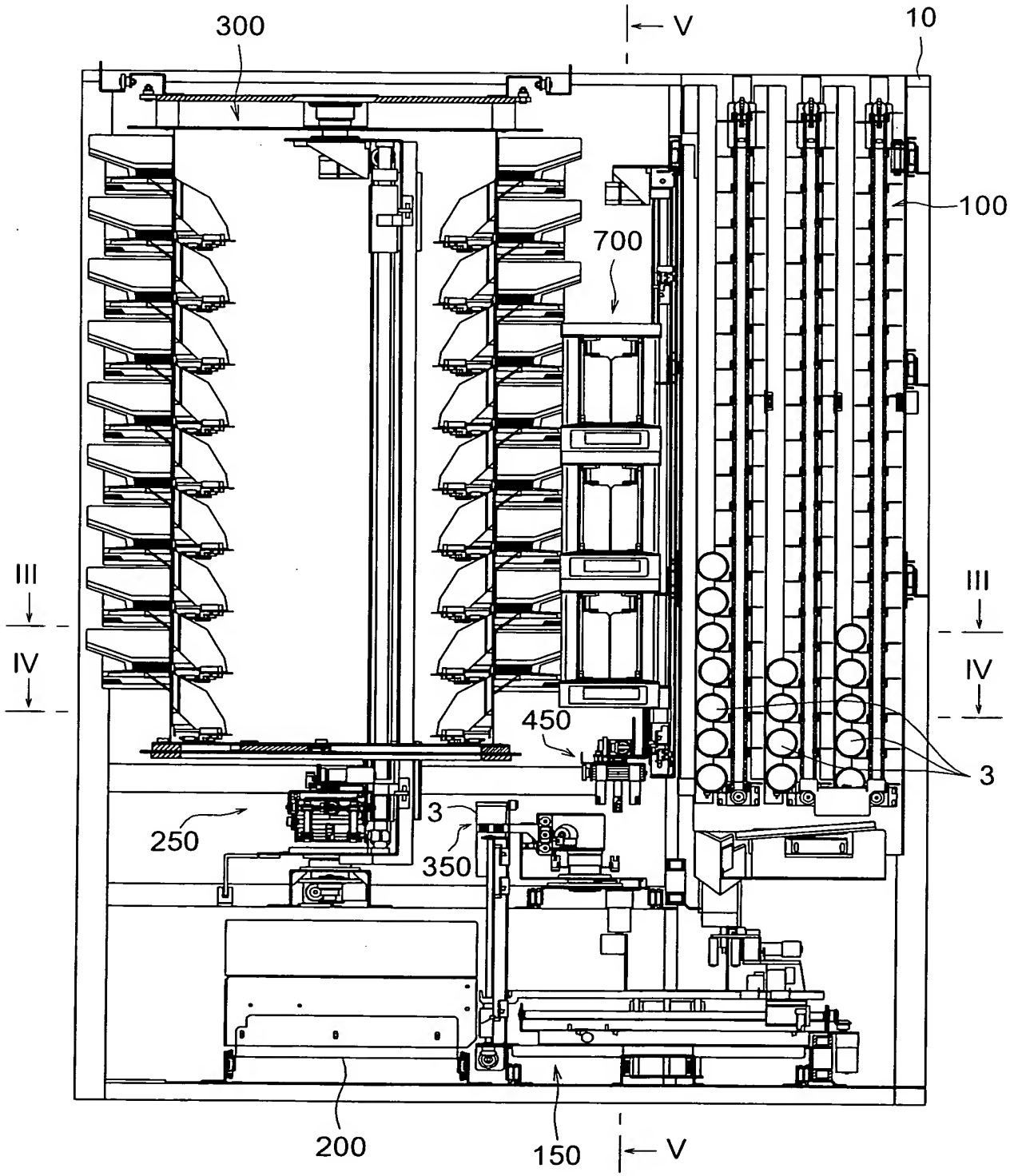


Fig.3

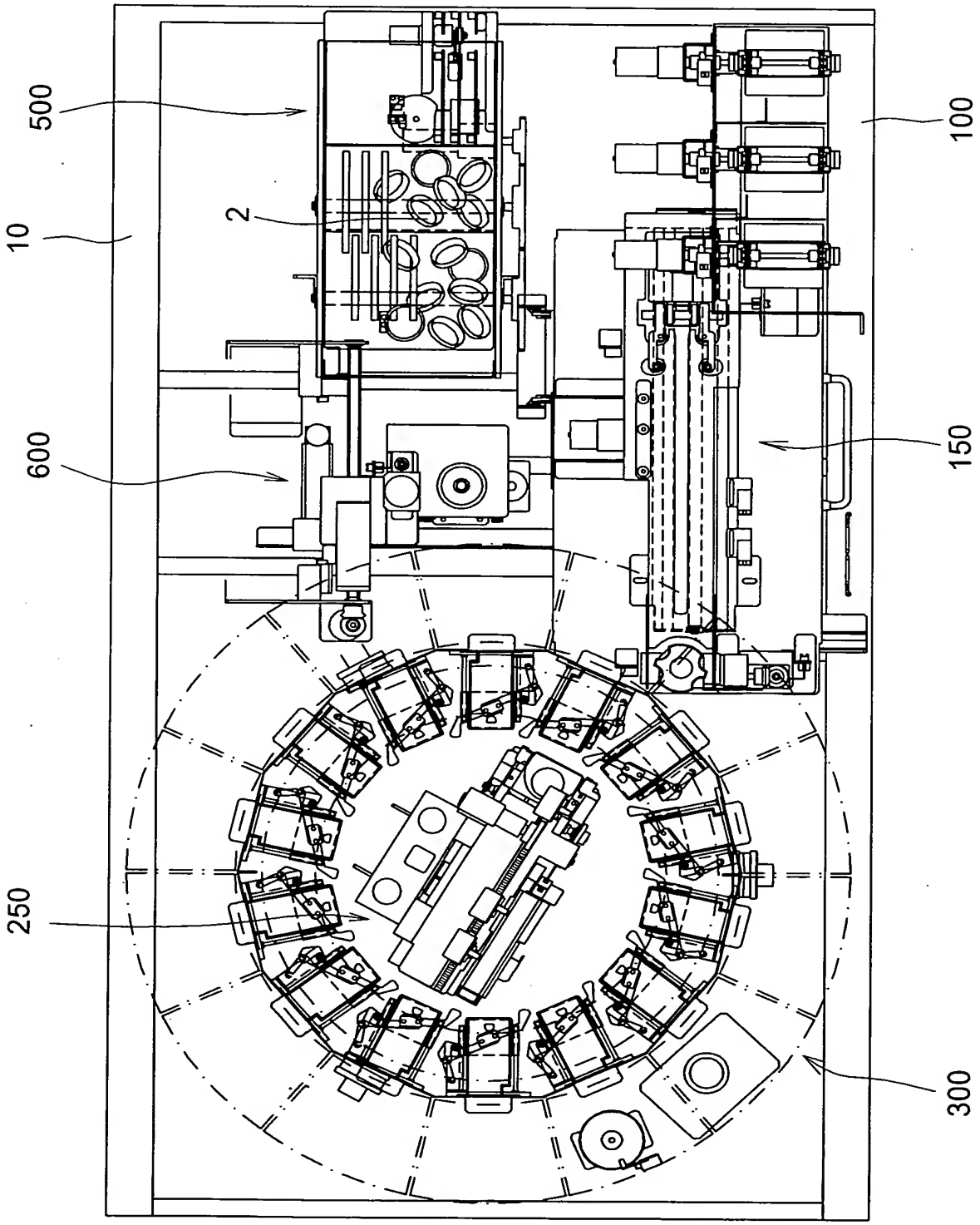


Fig.4

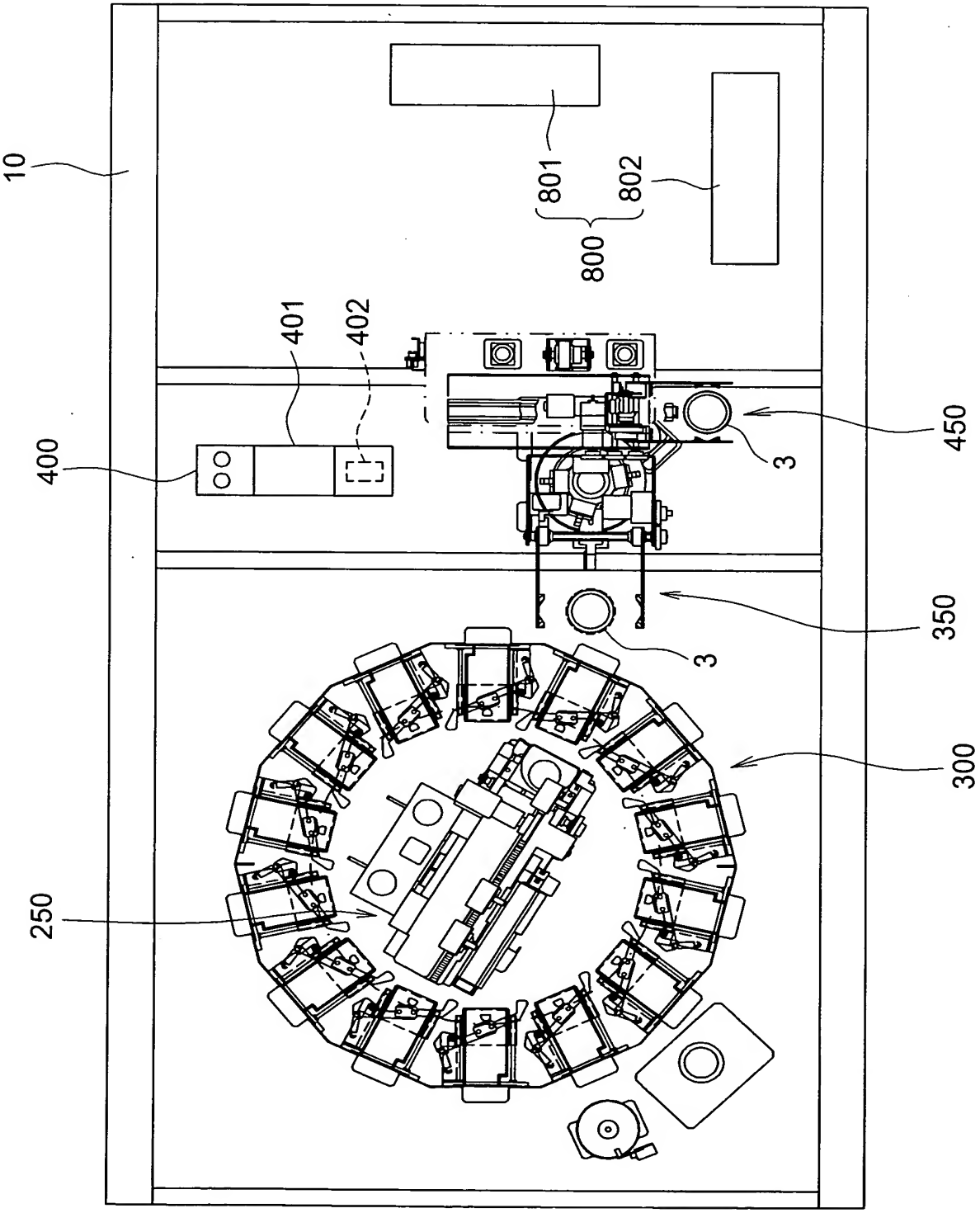


Fig.5

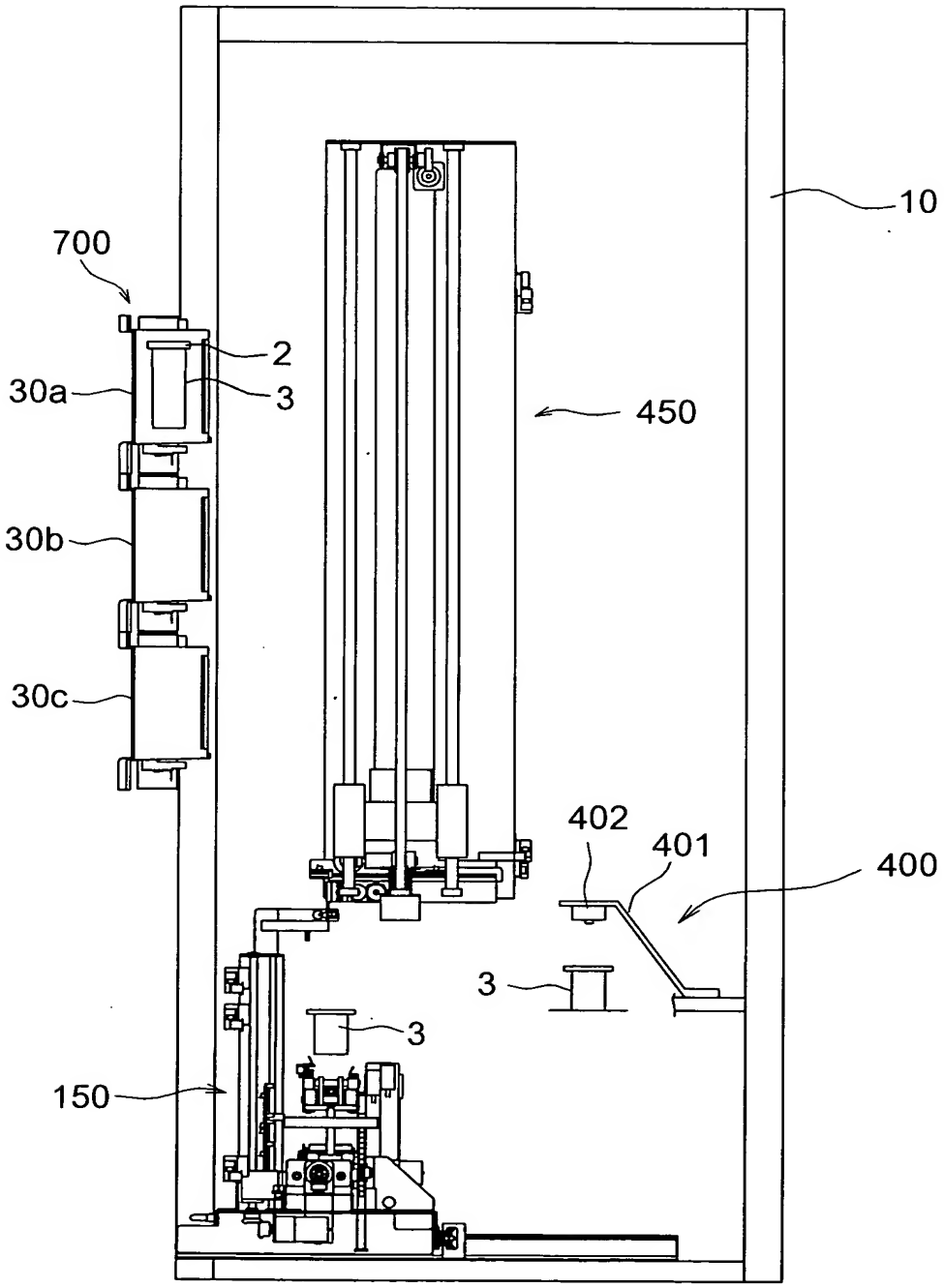


Fig.6

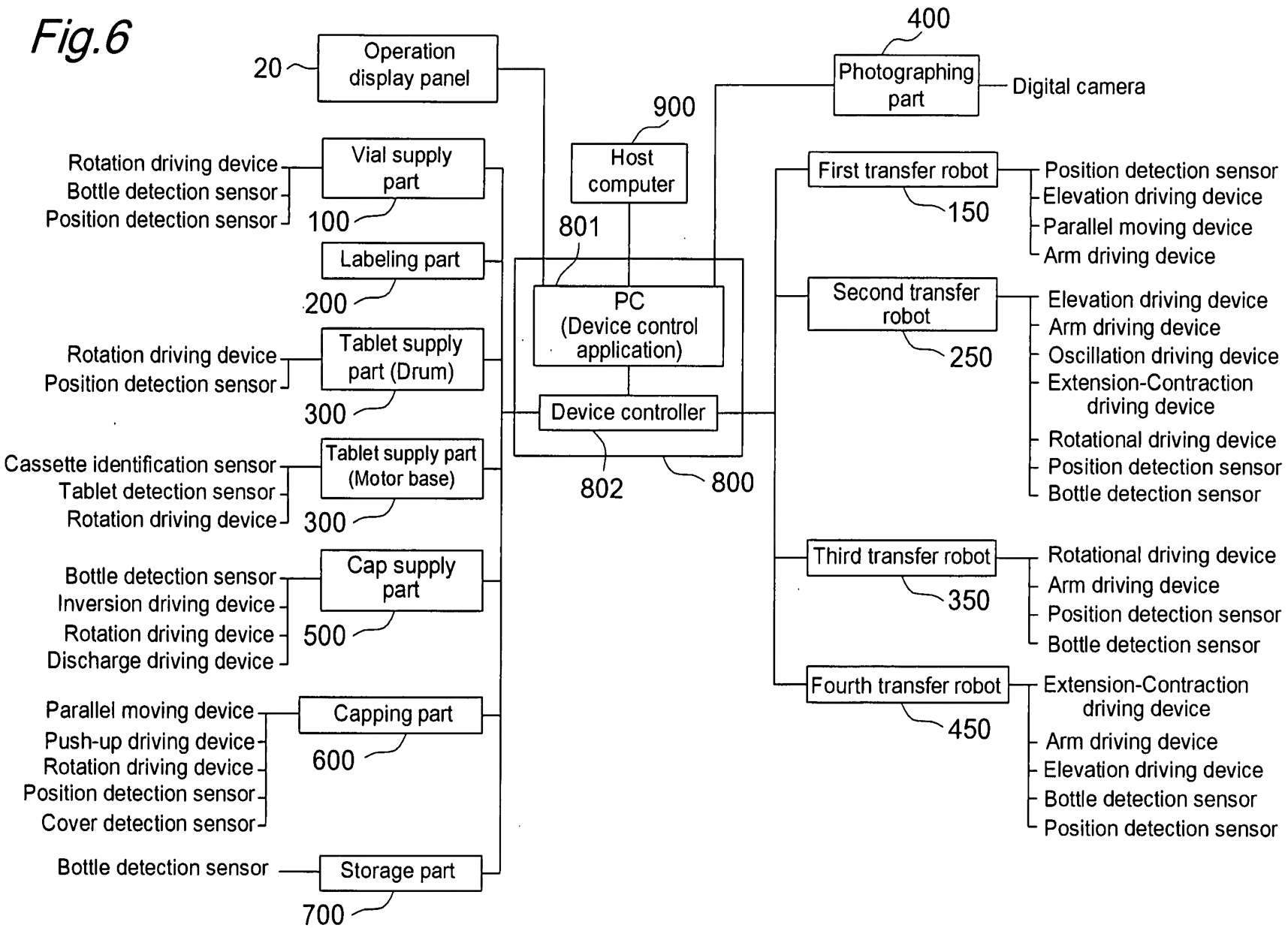

20
Operation display panel
900
Host computer
801
PC (Device control application)
Device controller
802
800
400
Photographing part
Digital camera
Rotation driving device
Bottle detection sensor
Position detection sensor
Vial supply part
100
Labeling part
200
Rotation driving device
Position detection sensor
Tablet supply part (Drum)
300
Cassette identification sensor
Tablet detection sensor
Rotation driving device
Tablet supply part (Motor base)
300
Bottle detection sensor
Inversion driving device
Rotation driving device
Discharge driving device
Cap supply part
500
Parallel moving device
Push-up driving device
Rotation driving device
Position detection sensor
Cover detection sensor
Capping part
600
Bottle detection sensor
Storage part
700
First transfer robot
150
Position detection sensor
Elevation driving device
Parallel moving device
Arm driving device
Second transfer robot
250
Elevation driving device
Arm driving device
Oscillation driving device
Extension-Contraction driving device
Rotational driving device
Position detection sensor
Bottle detection sensor
Third transfer robot
350
Rotational driving device
Arm driving device
Position detection sensor
Bottle detection sensor
Fourth transfer robot
450
Extension-Contraction driving device
Arm driving device
Elevation driving device
Bottle detection sensor
Position detection sensor

Fig.7

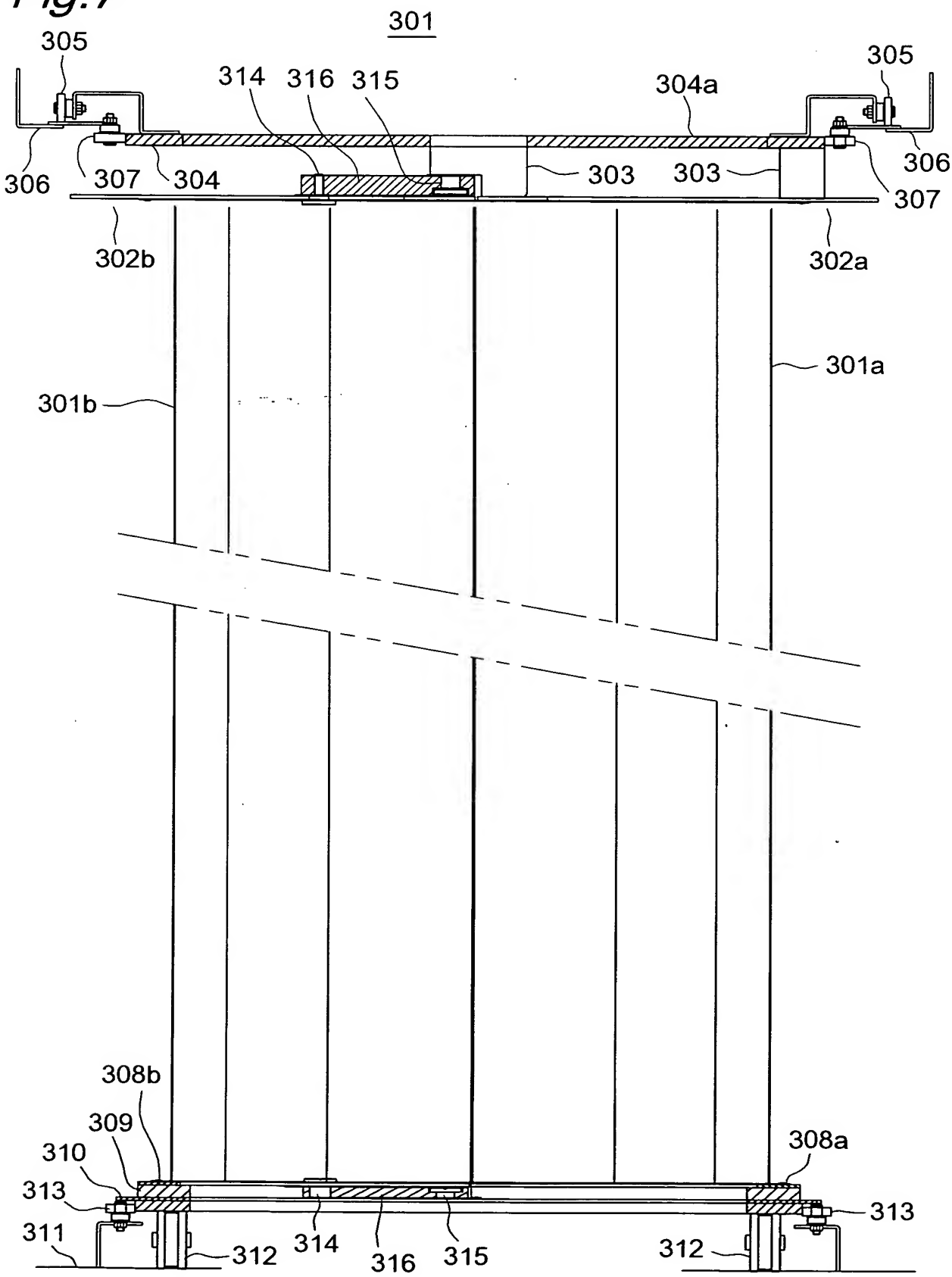

301
305
305
314
316
315
304a
306
306
307
304
303
303
307
302b
302a
301a
301b
308b
309
310
308a
313
313
311
312
314
316
315
312

Fig.8

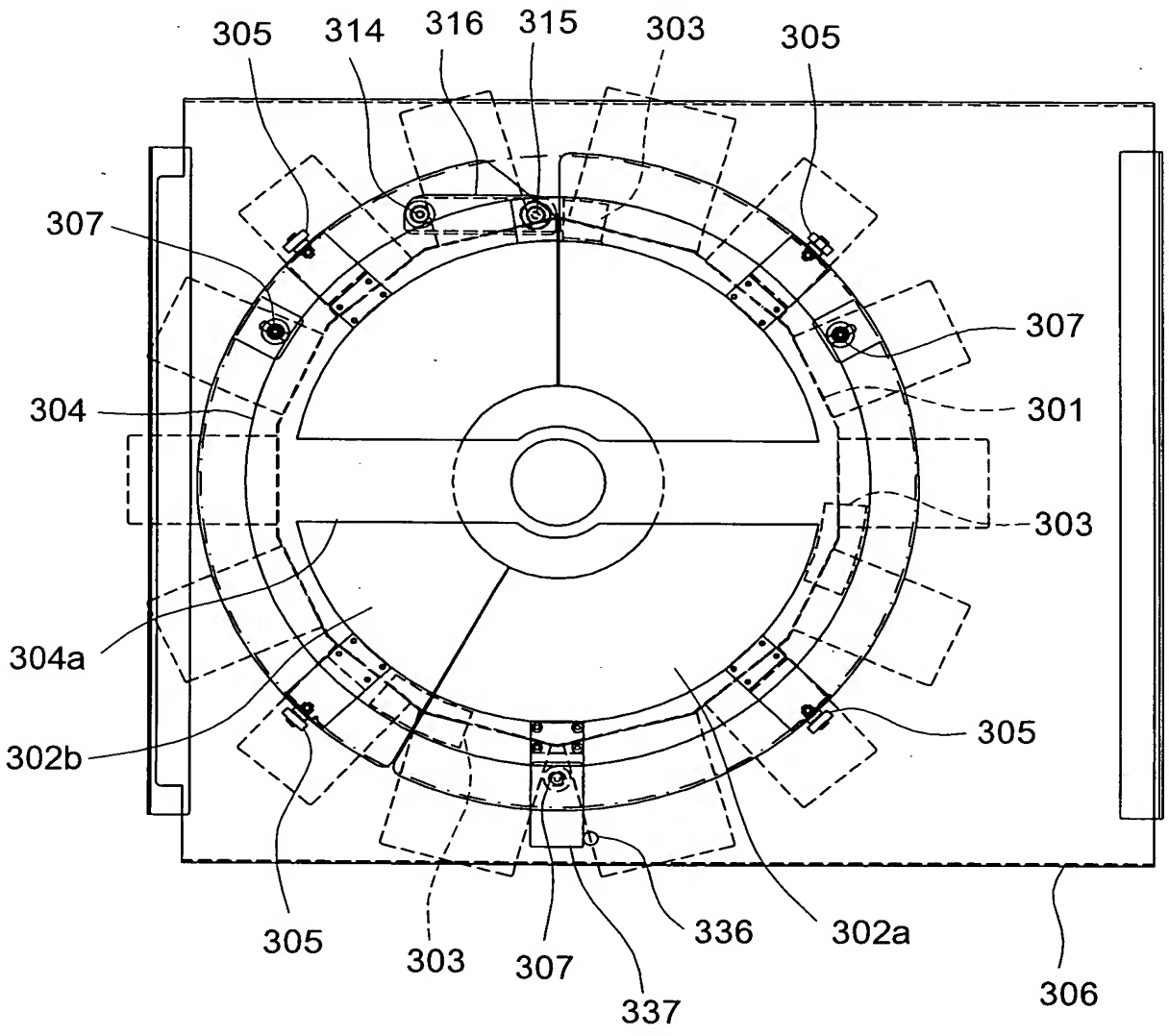

305
314
316
315
303
305
307
307
304
301
303
304a
302b
305
305
303
307
337
336
302a
306

Fig.9

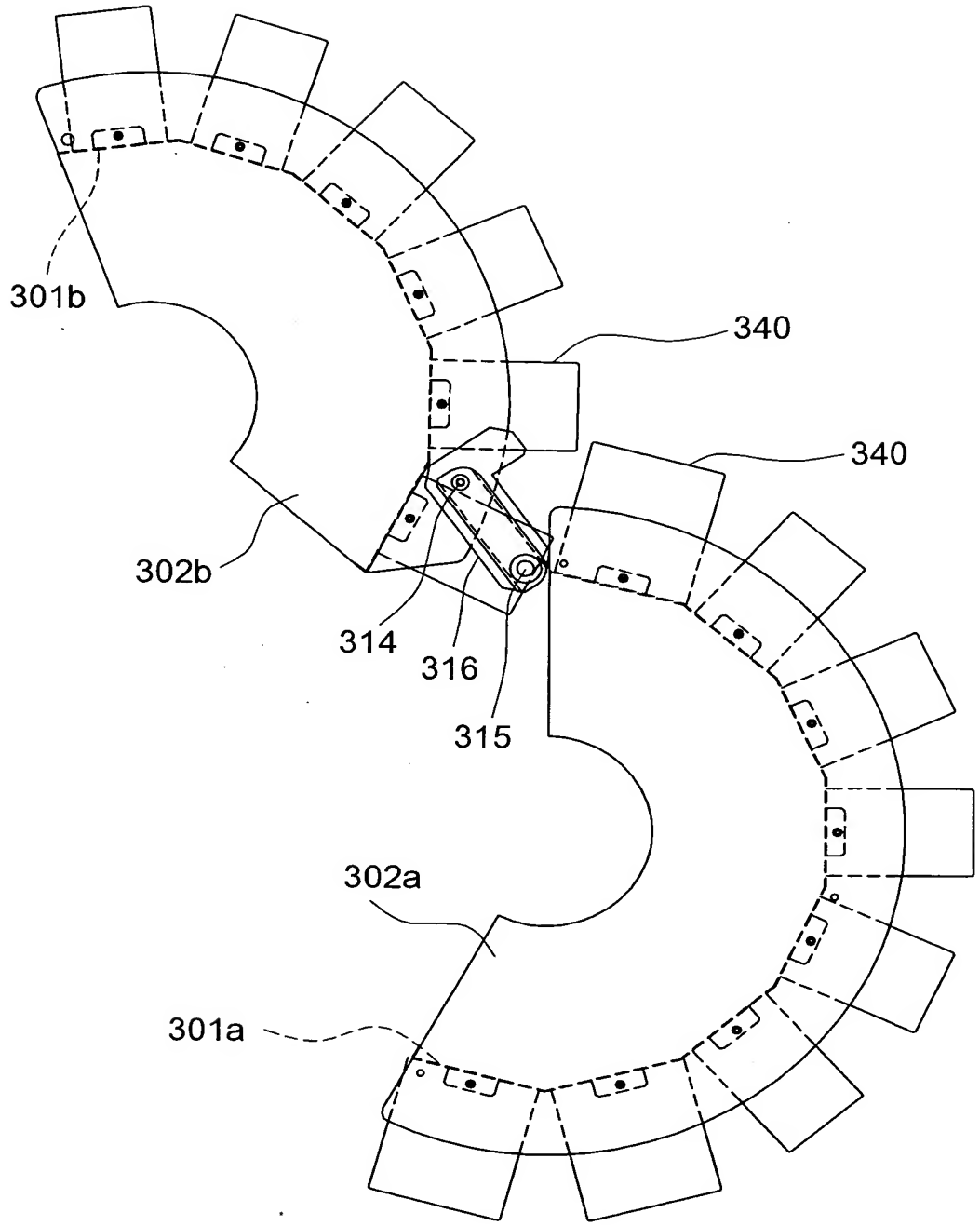


Fig. 10

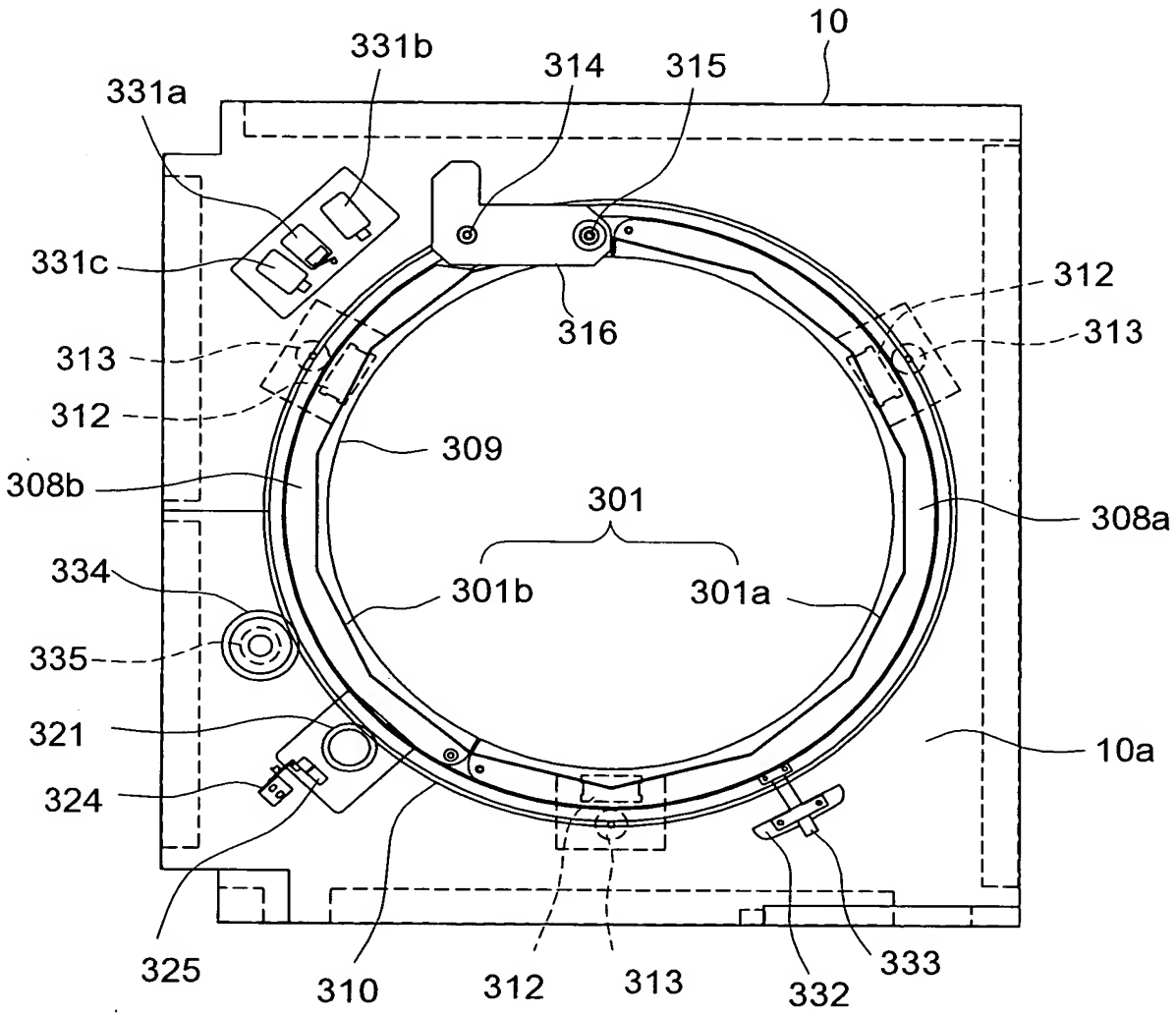

10
331b
314
315
331a
331c
316
312
313
313
312
309
308b
301
308a
334
301b
301a
335
321
10a
324
325
310
312
313
332
333

Fig. 11

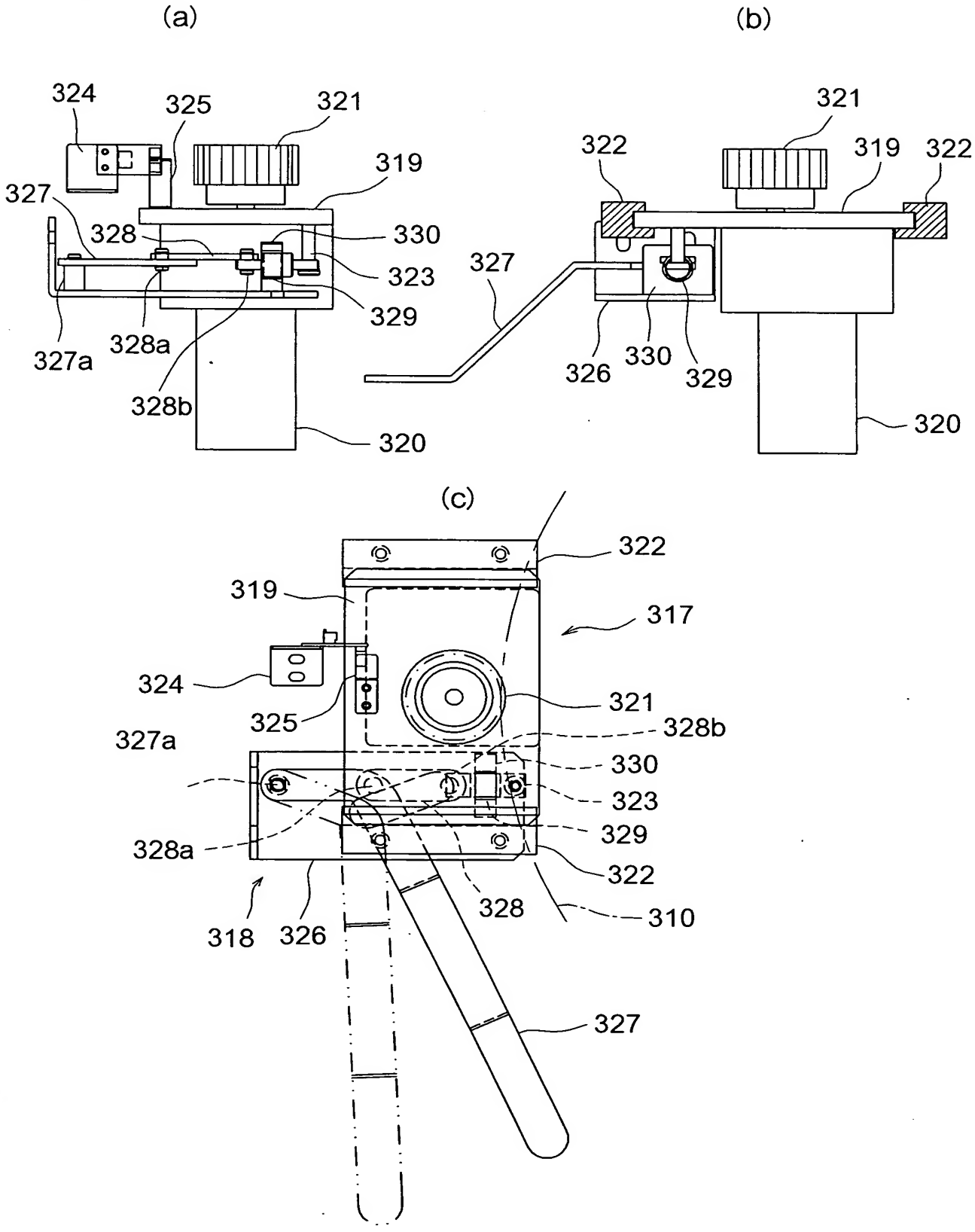

(a)
(b)
(c)
324
325
321
319
327
328
330
323
329
327a
328a
328b
320
322
326
318
310

Fig.12

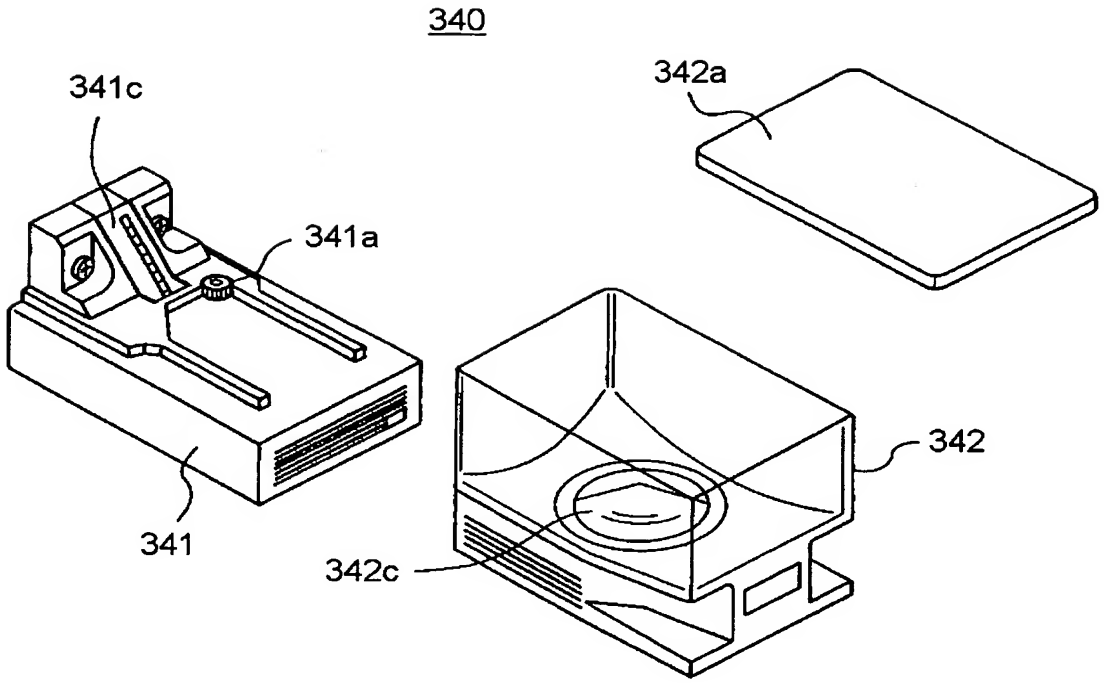


Fig. 13

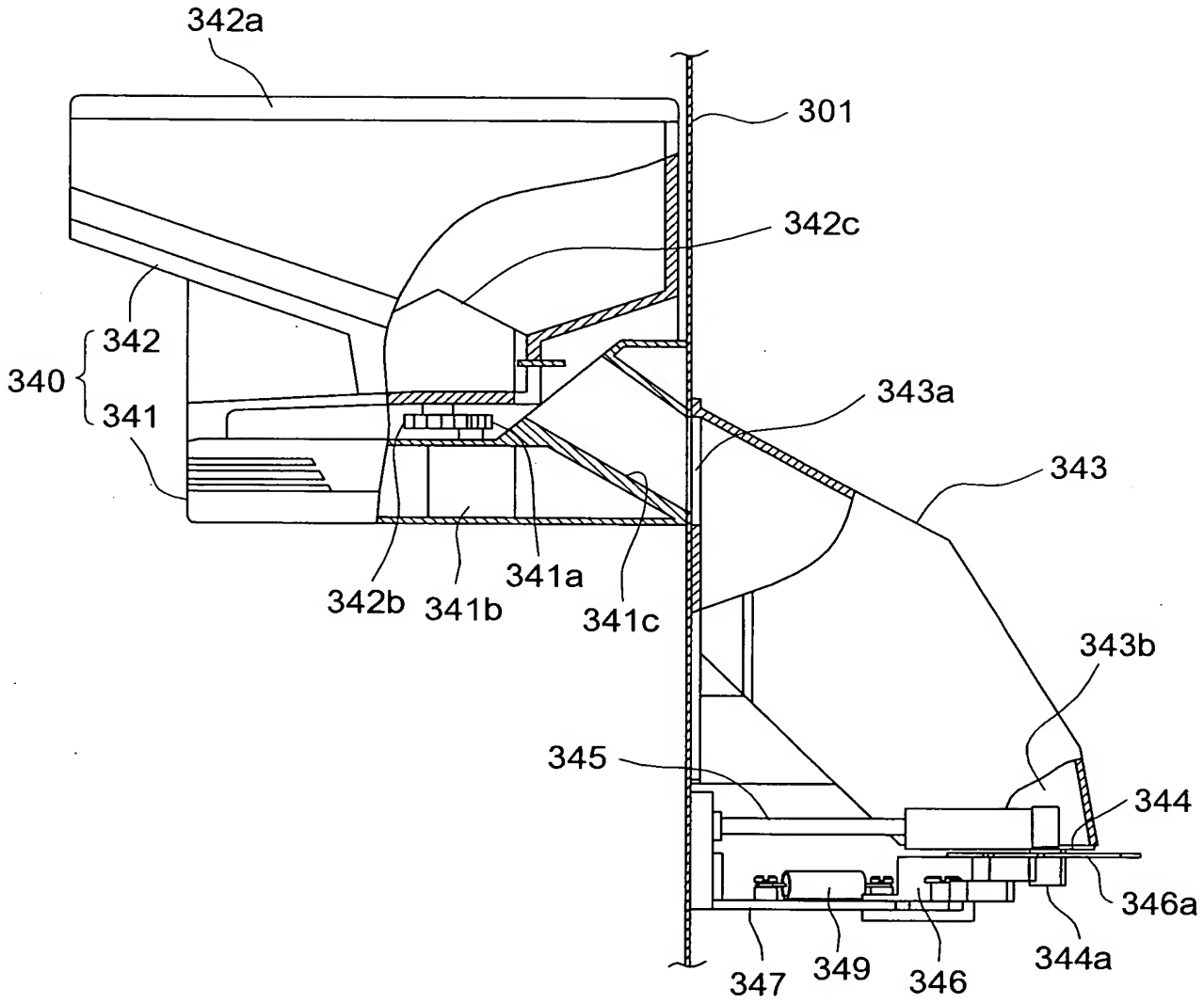

342a
301
342c
342
340
341
343a
343
342b
341b
341a
341c
343b
345
344
346a
344a
347
349
346

Fig. 14

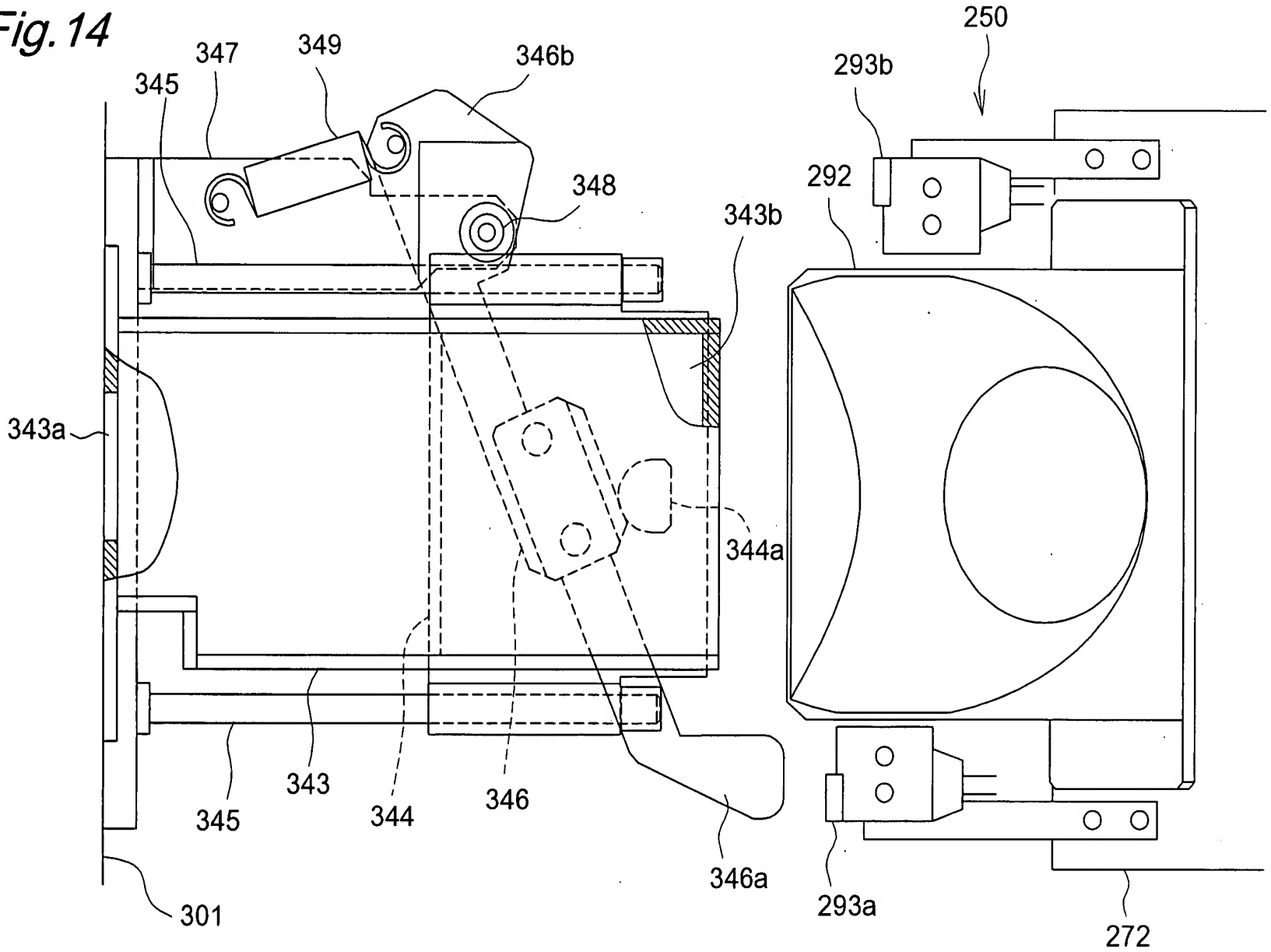
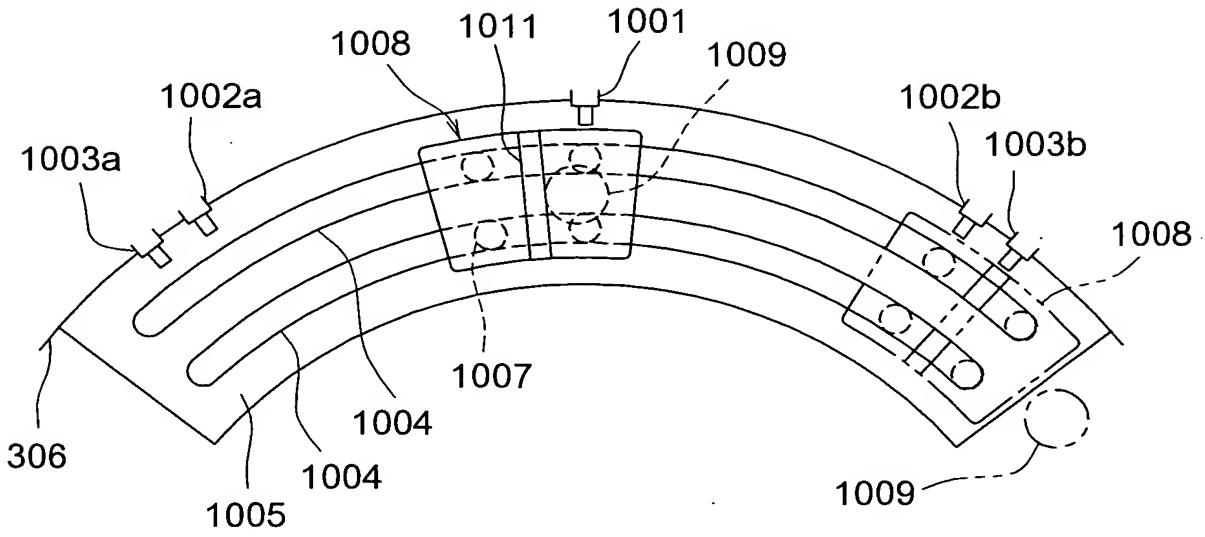
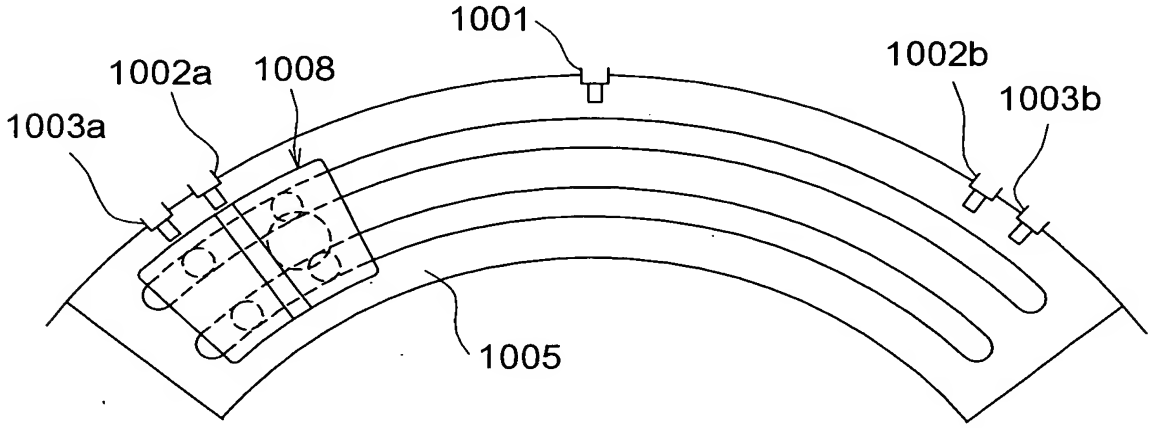

250
293b
347
349
346b
345
348
292
343b
343a
344a
345
343
344
346
346a
293a
301
272

Fig. 15

(a)


1008
1011
1001
1009
1002a
1002b
1003a
1003b
1008
1007
1004
306
1004
1005
1009

(b)


1001
1002a
1008
1002b
1003b
1003a
1005

(c)

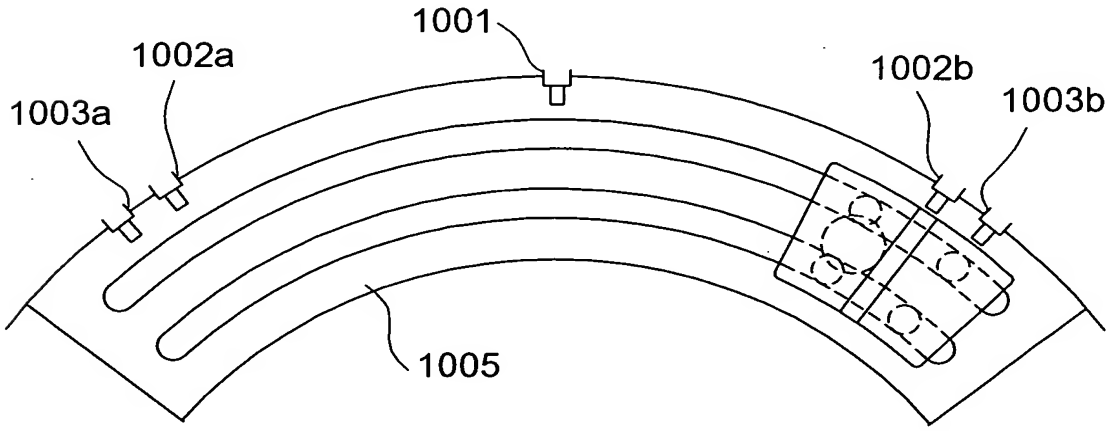

1001
1002a
1002b
1003b
1003a
1005

Fig. 16

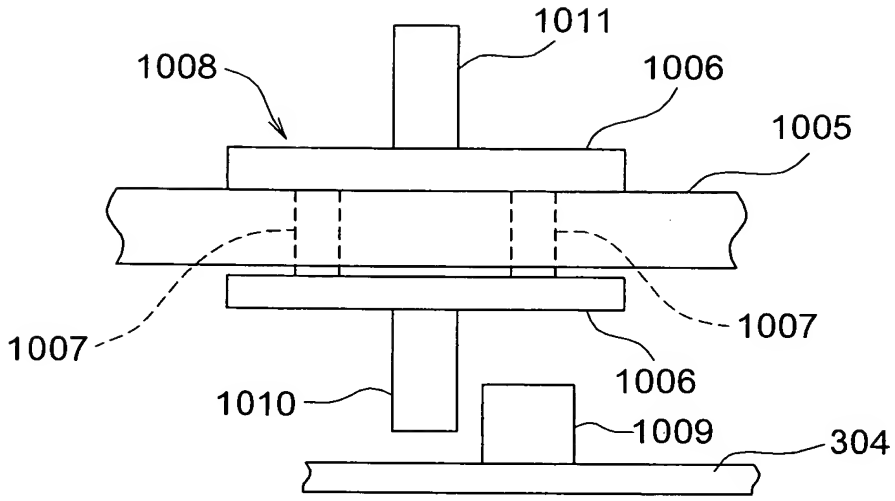

1011
1008
1006
1005
1007
1007
1006
1010
1009
304

Fig. 17

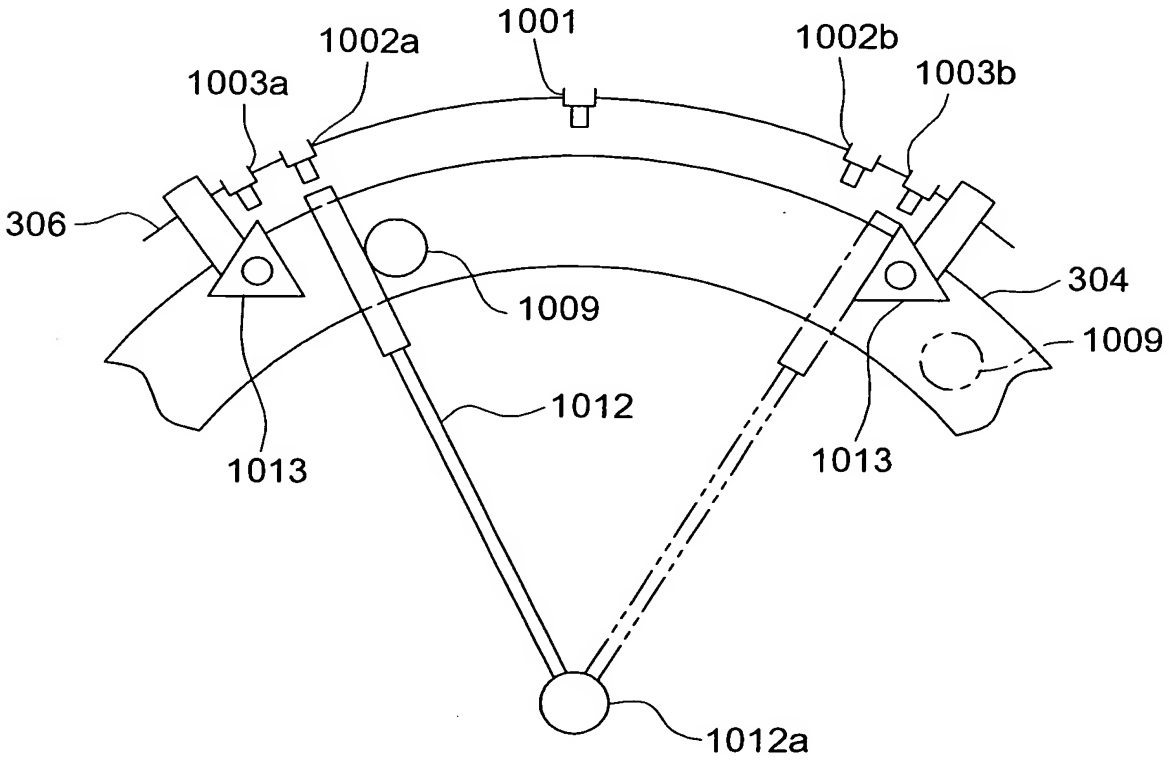

1001
1002a
1002b
1003a
1003b
306
304
1009
1009
1012
1013
1013
1012a

Fig. 18

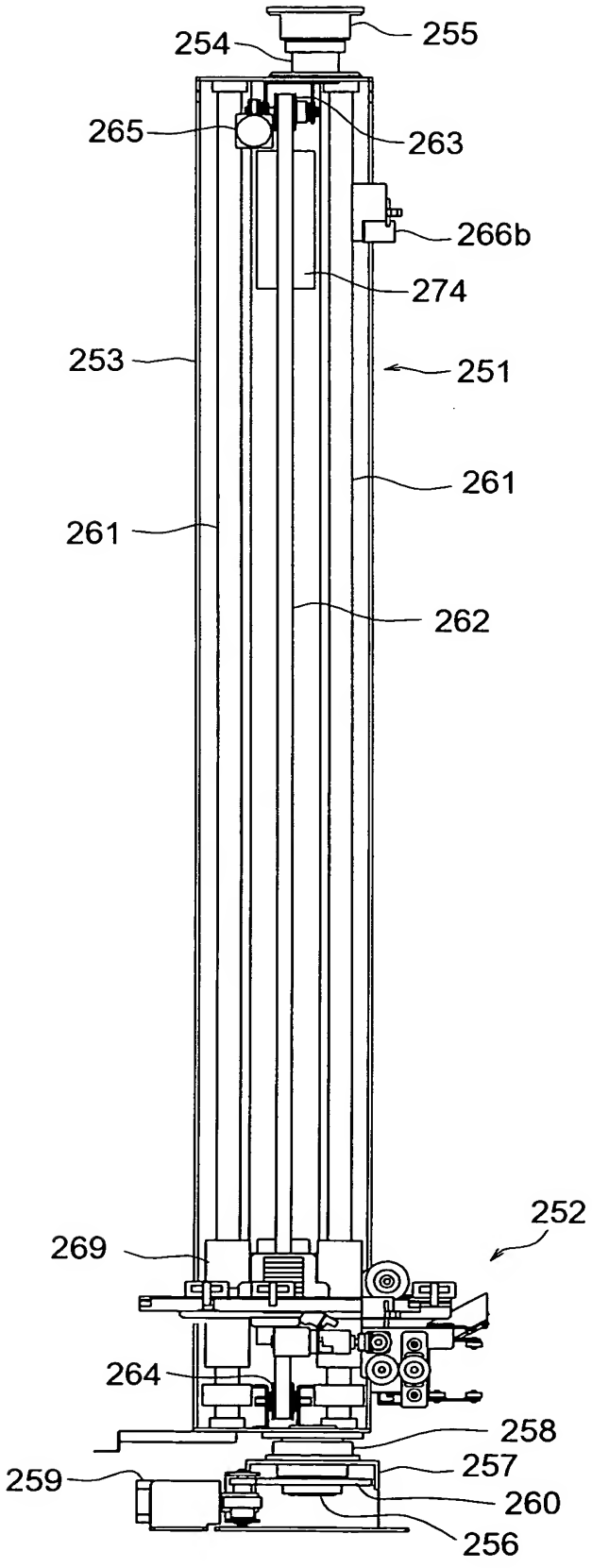

254
255
265
263
266b
274
253
251
261
261
262
252
269
264
258
257
259
260
256

Fig. 19

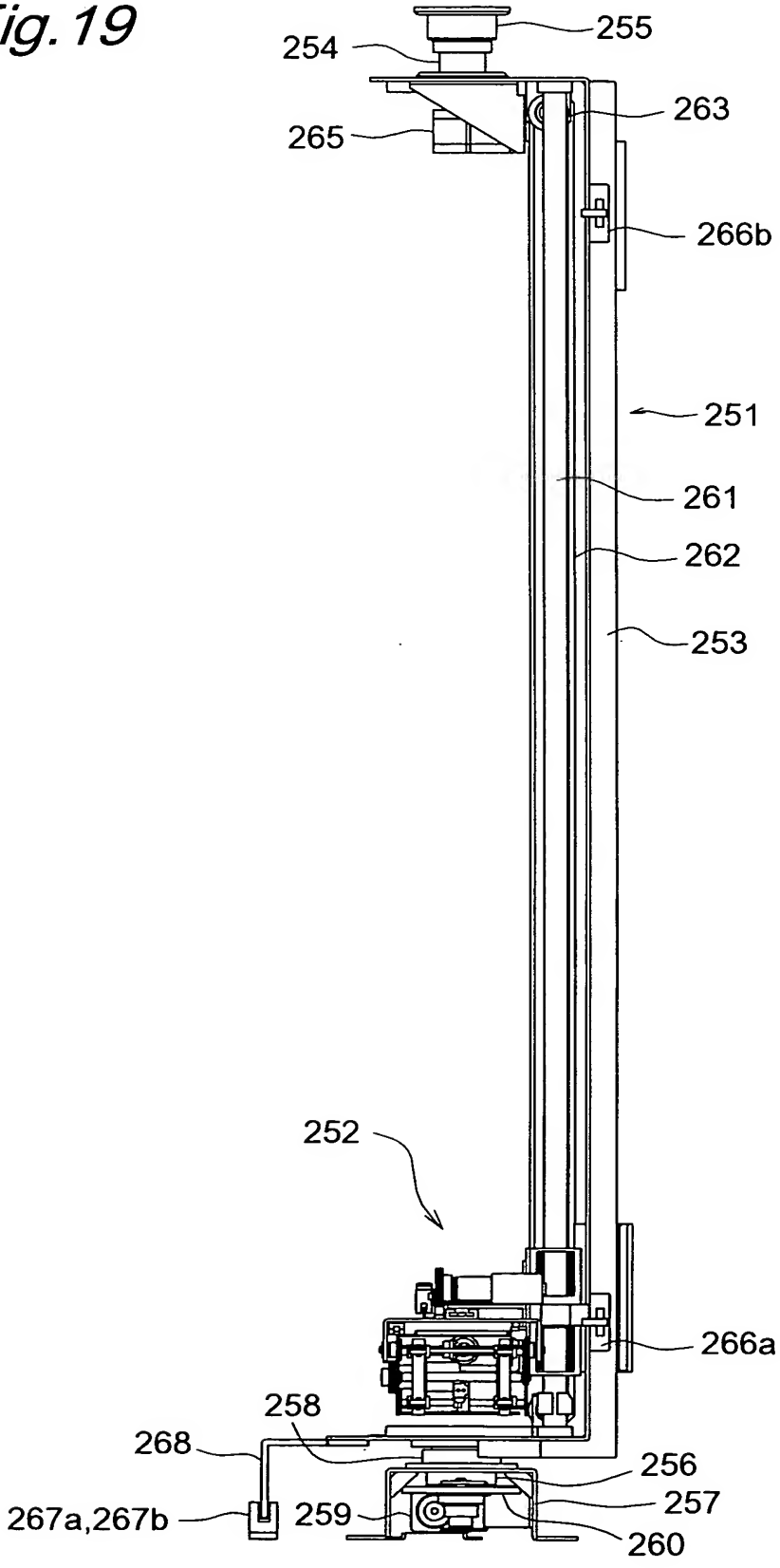
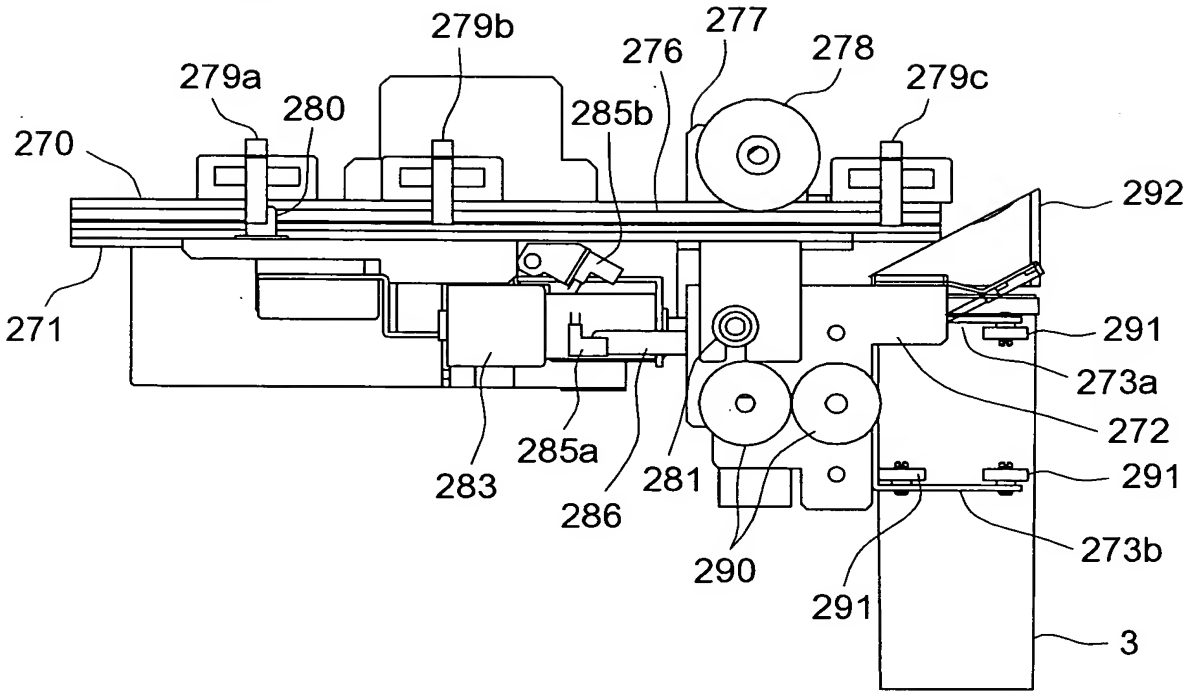

255
254
263
265
266b
251
261
262
253
252
266a
258
268
256
257
267a,267b
259
260

Fig.20

(a)


279b
277
276
278
279a
280
279c
285b
270
292
271
291
273a
272
285a
283
281
291
286
290
273b
291
3

(b)

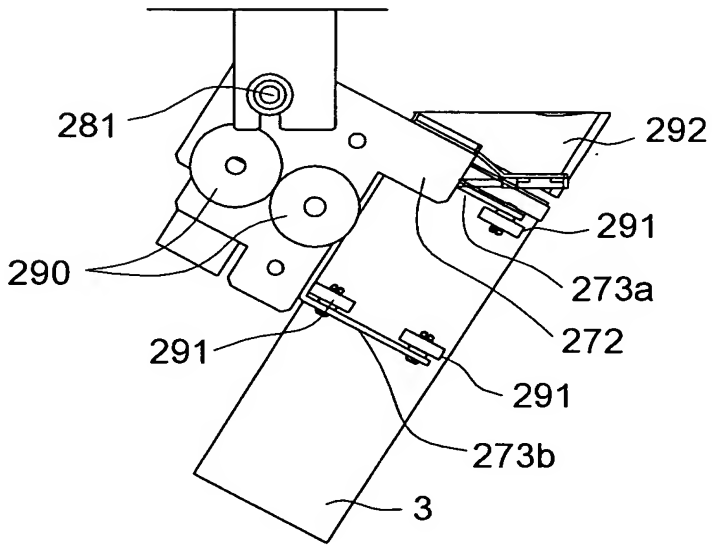

281
292
291
290
273a
272
291
291
273b
3

Fig.21

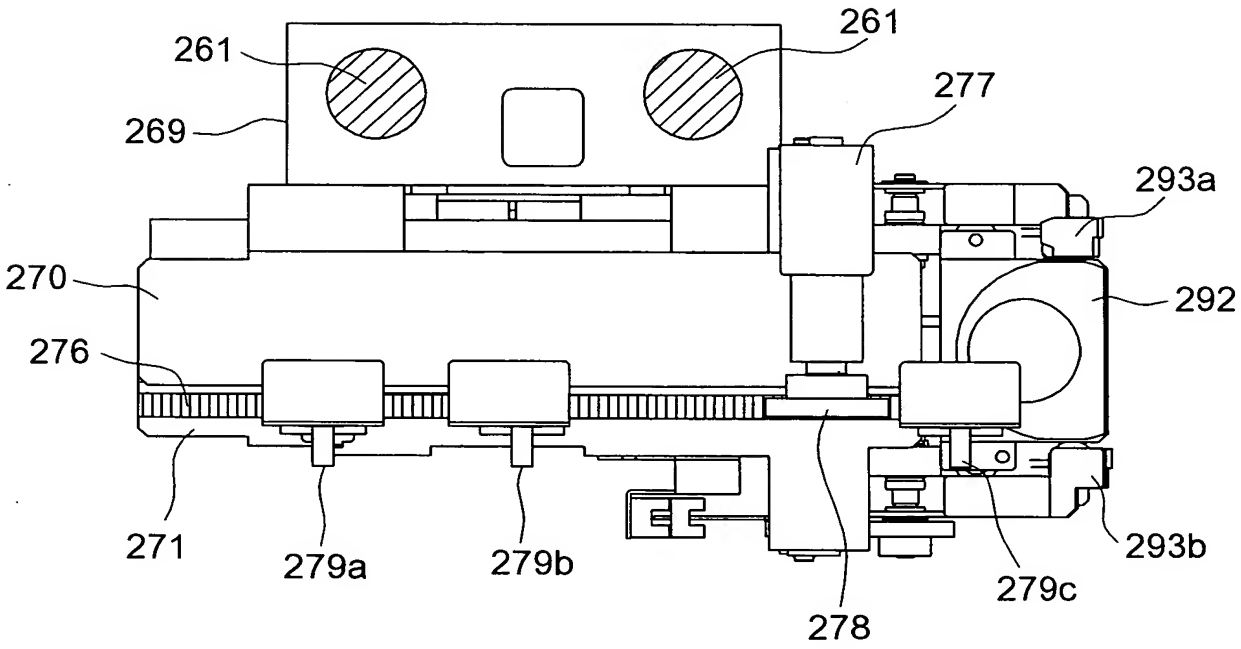


Fig.22

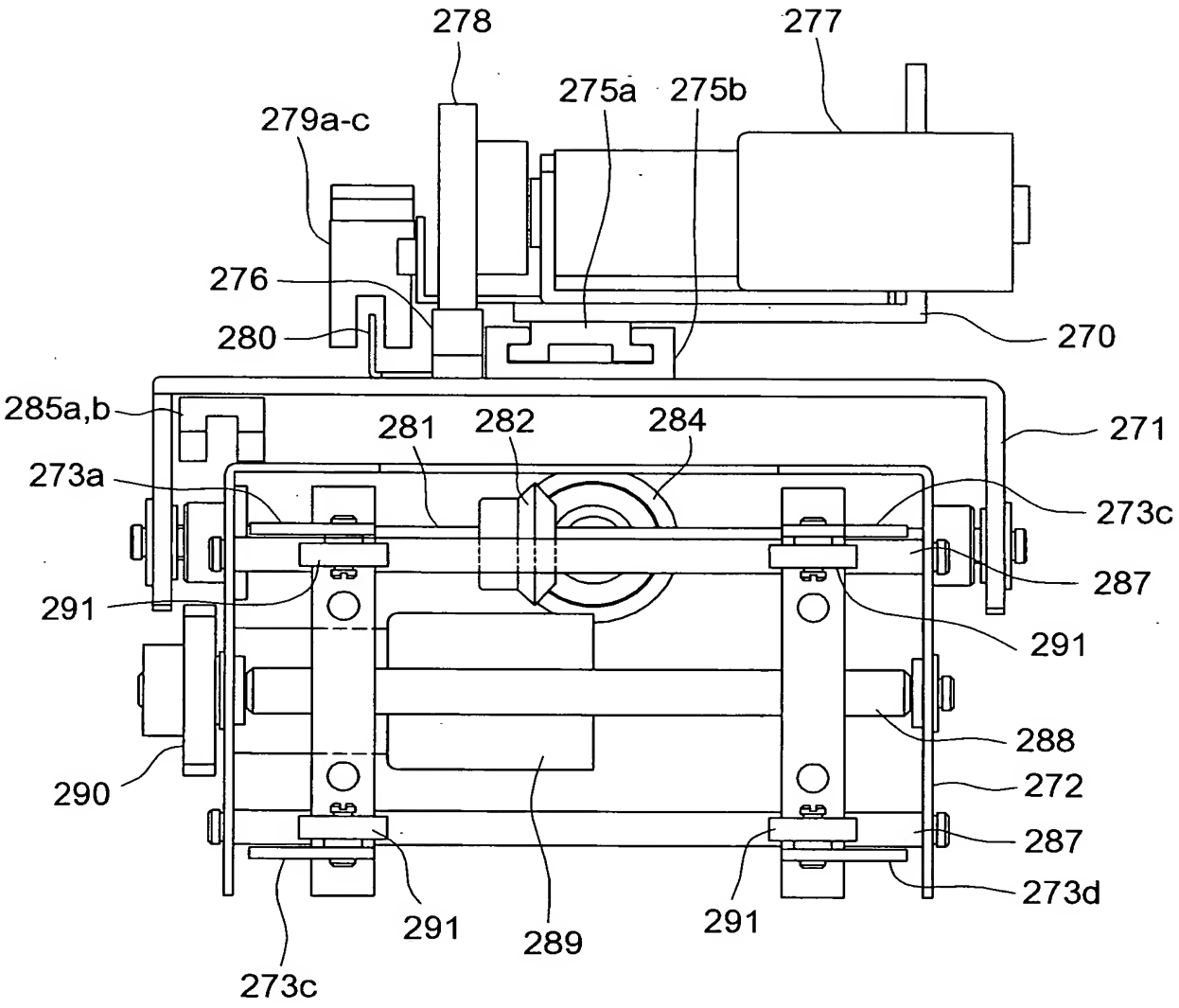

278
277
275a
275b
279a-c
276
280
270
285a,b
281
282
284
271
273a
273c
287
291
291
288
290
272
287
273d
291
289
291
273c

Fig.23

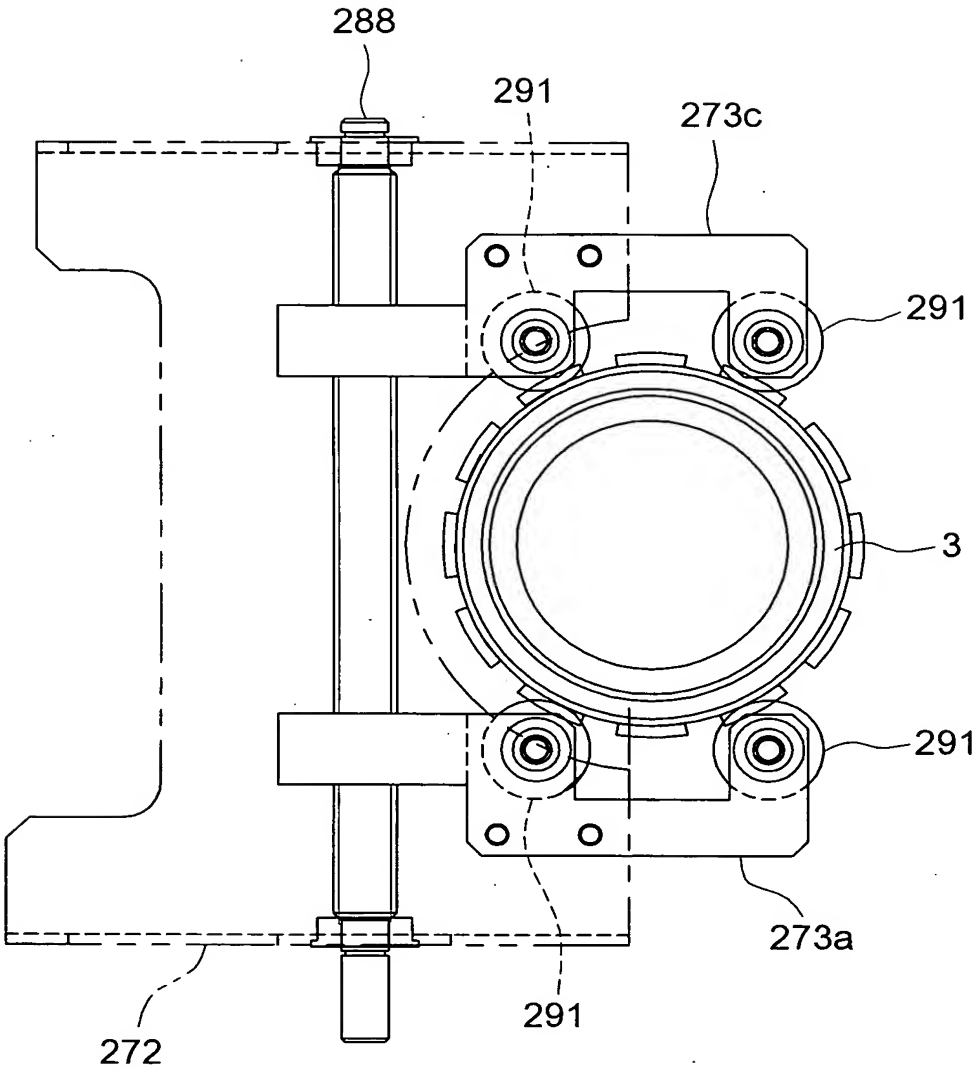


Fig.24

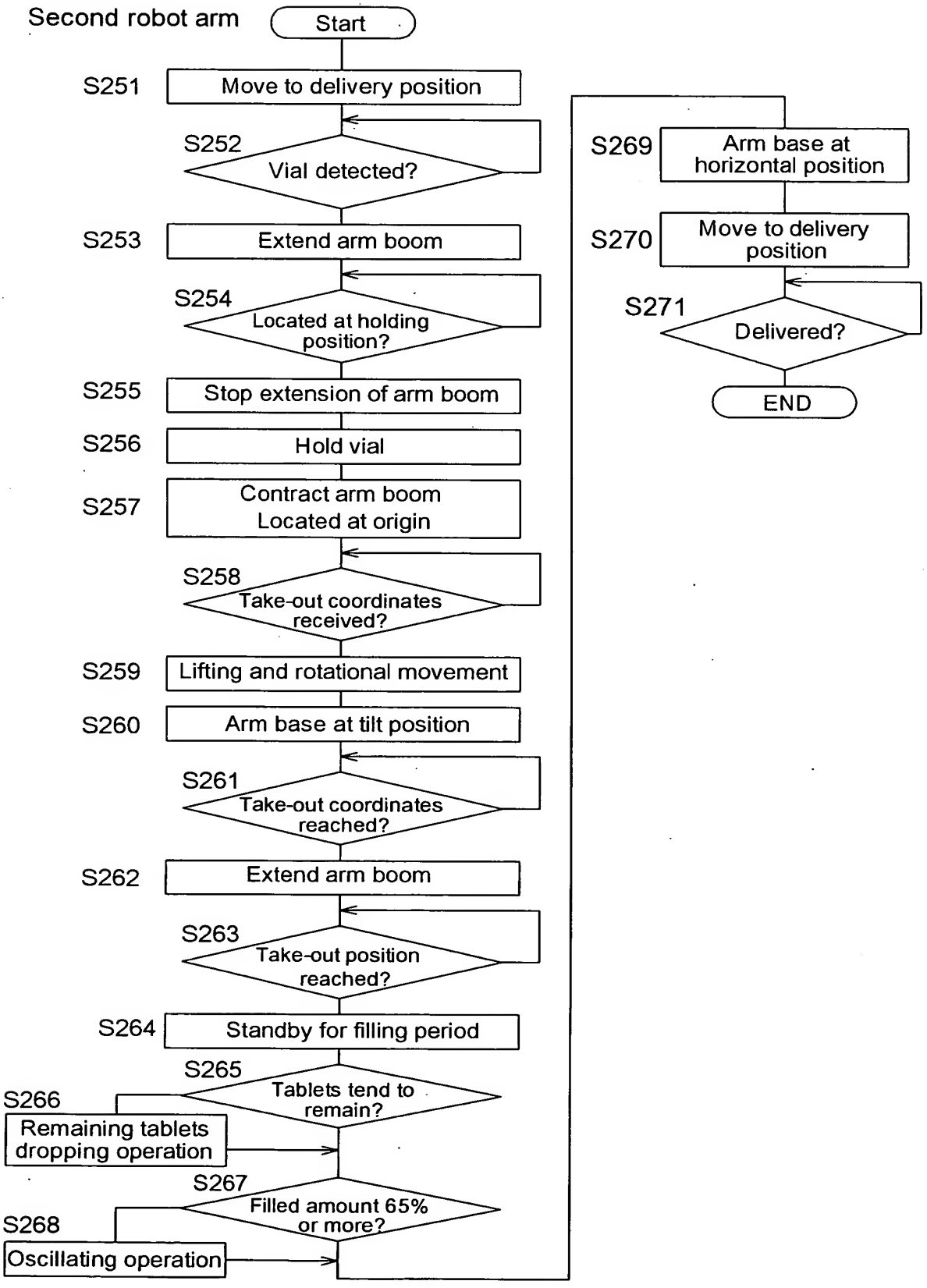

Second robot arm
Start
S251
Move to delivery position
S252
Vial detected?
S253
Extend arm boom
S254
Located at holding position?
S255
Stop extension of arm boom
S256
Hold vial
S257
Contract arm boom
Located at origin
S258
Take-out coordinates received?
S259
Lifting and rotational movement
S260
Arm base at tilt position
S261
Take-out coordinates reached?
S262
Extend arm boom
S263
Take-out position reached?
S264
Standby for filling period
S265
Tablets tend to remain?
S266
Remaining tablets dropping operation
S267
Filled amount 65% or more?
S268
Oscillating operation
S269
Arm base at horizontal position
S270
Move to delivery position
S271
Delivered?
END

Fig.25

Mutual control

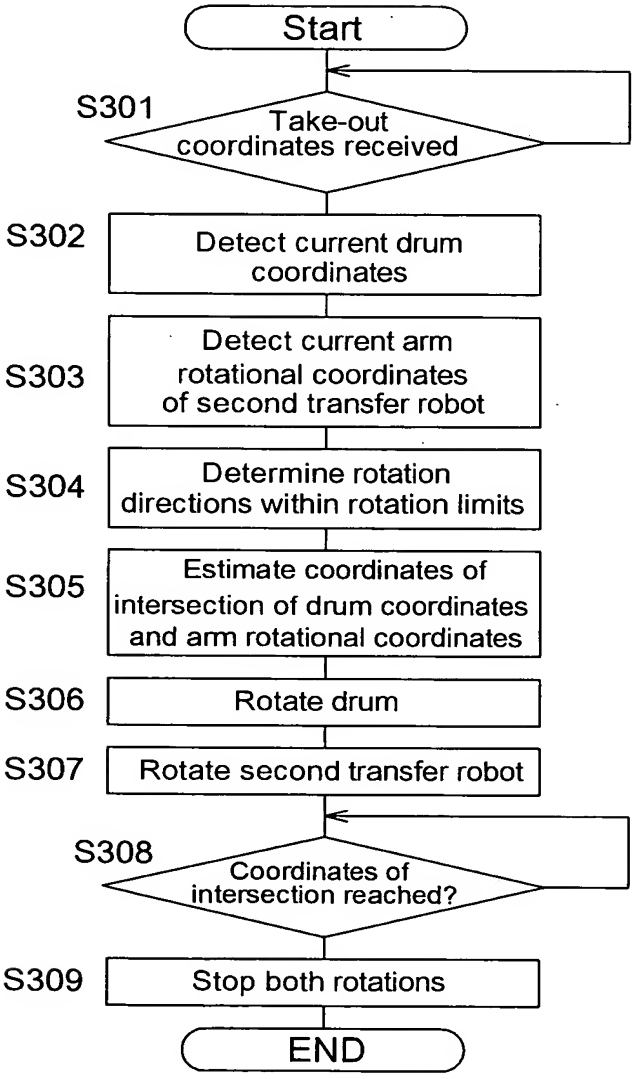


Fig.26

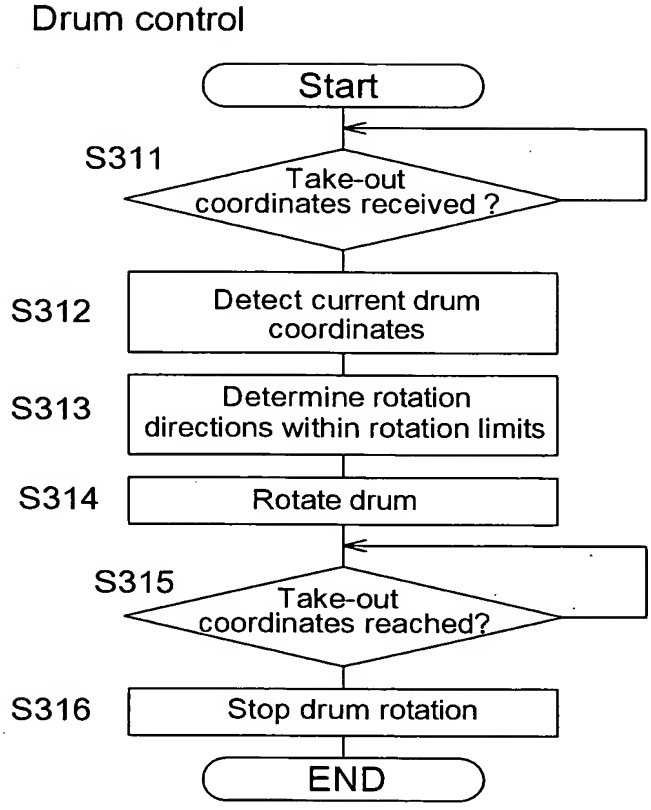

Drum control
Start
S311
Take-out coordinates received ?
S312
Detect current drum coordinates
S313
Determine rotation directions within rotation limits
S314
Rotate drum
S315
Take-out coordinates reached?
S316
Stop drum rotation
END

Fig.27

Robot arm control

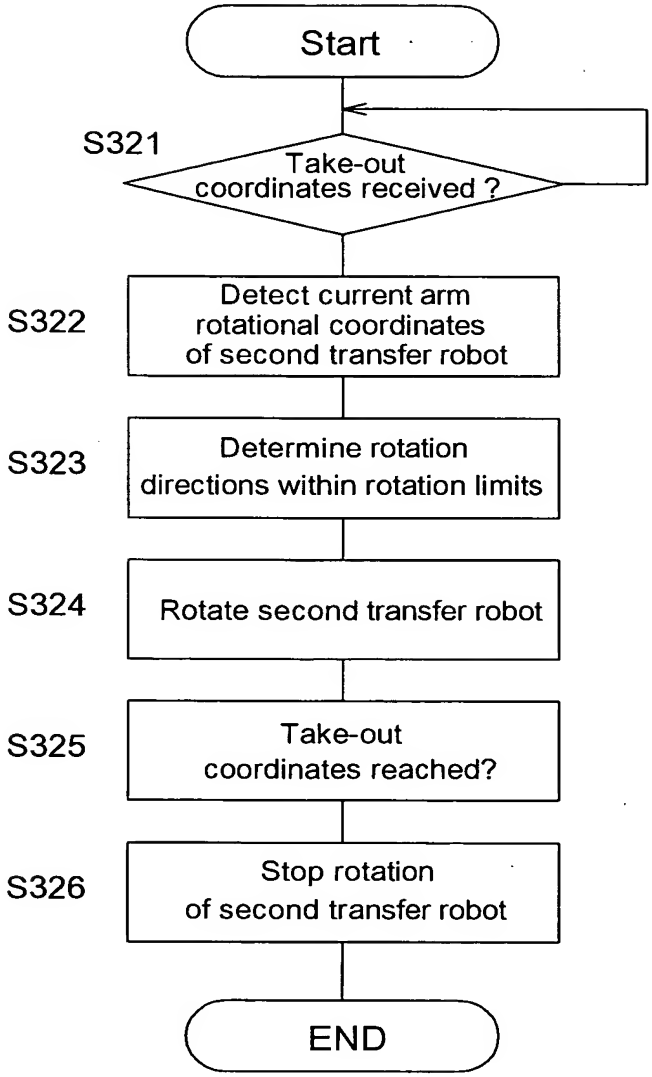


Fig.28

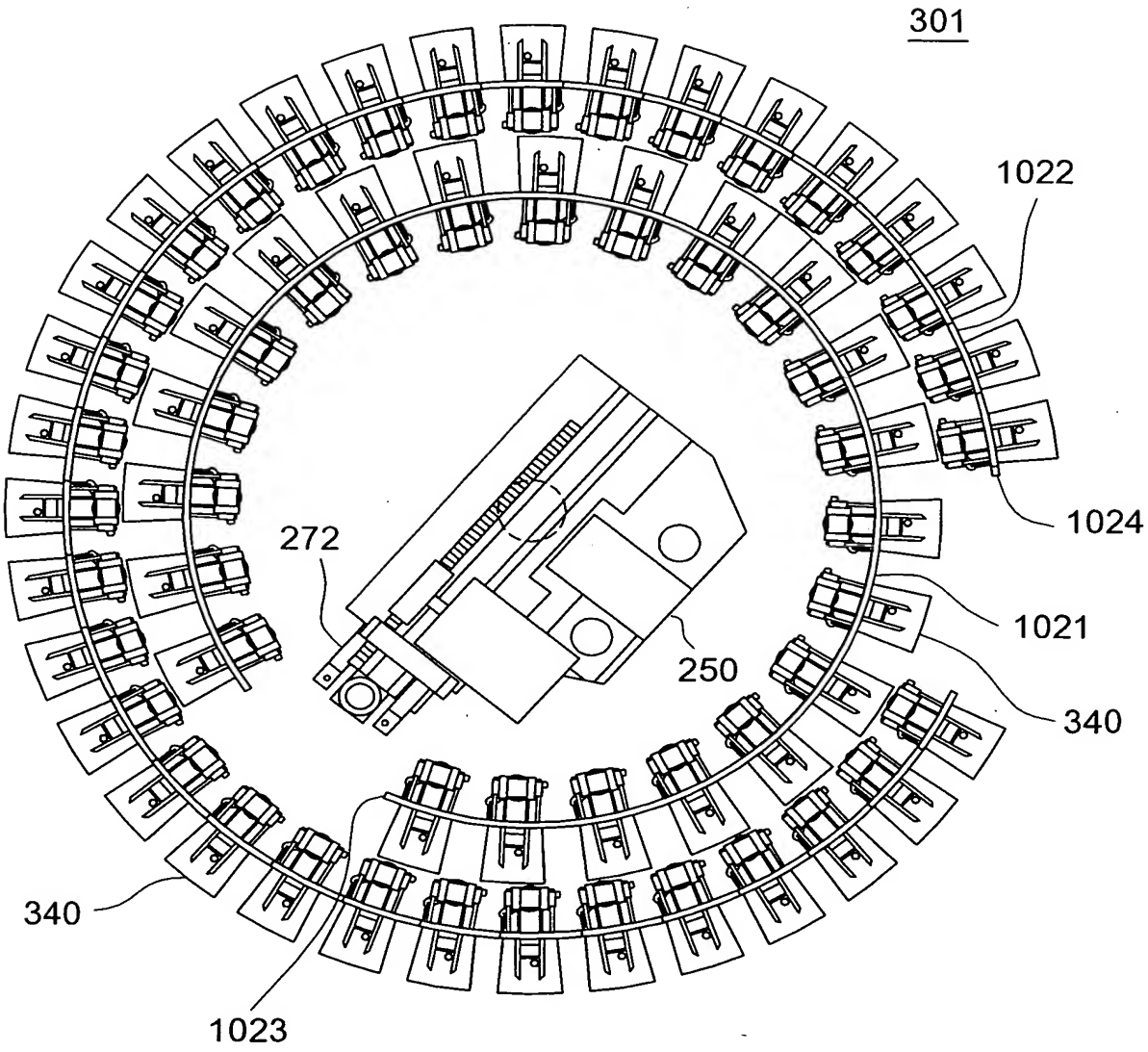


Fig.29

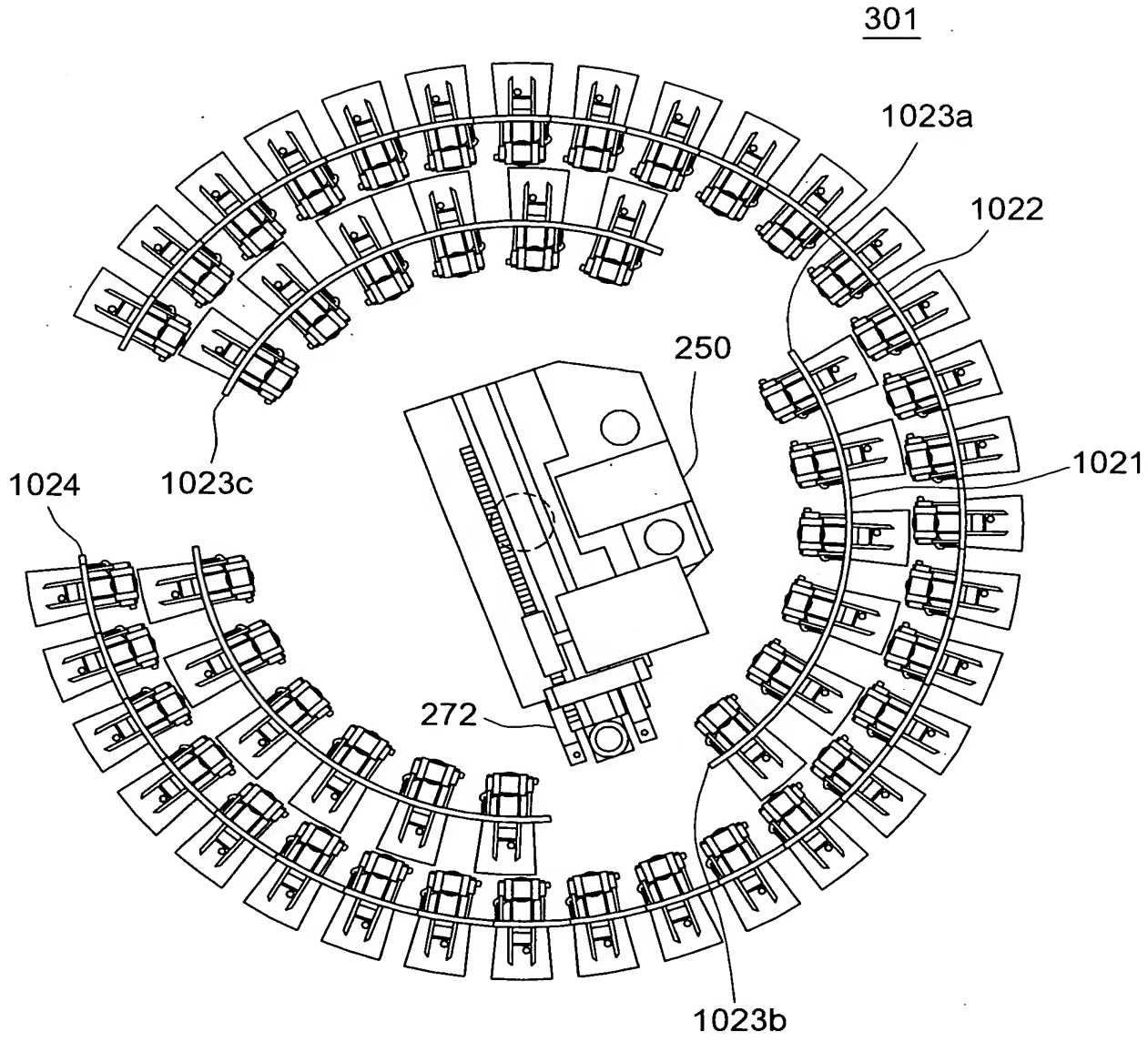


Fig.30

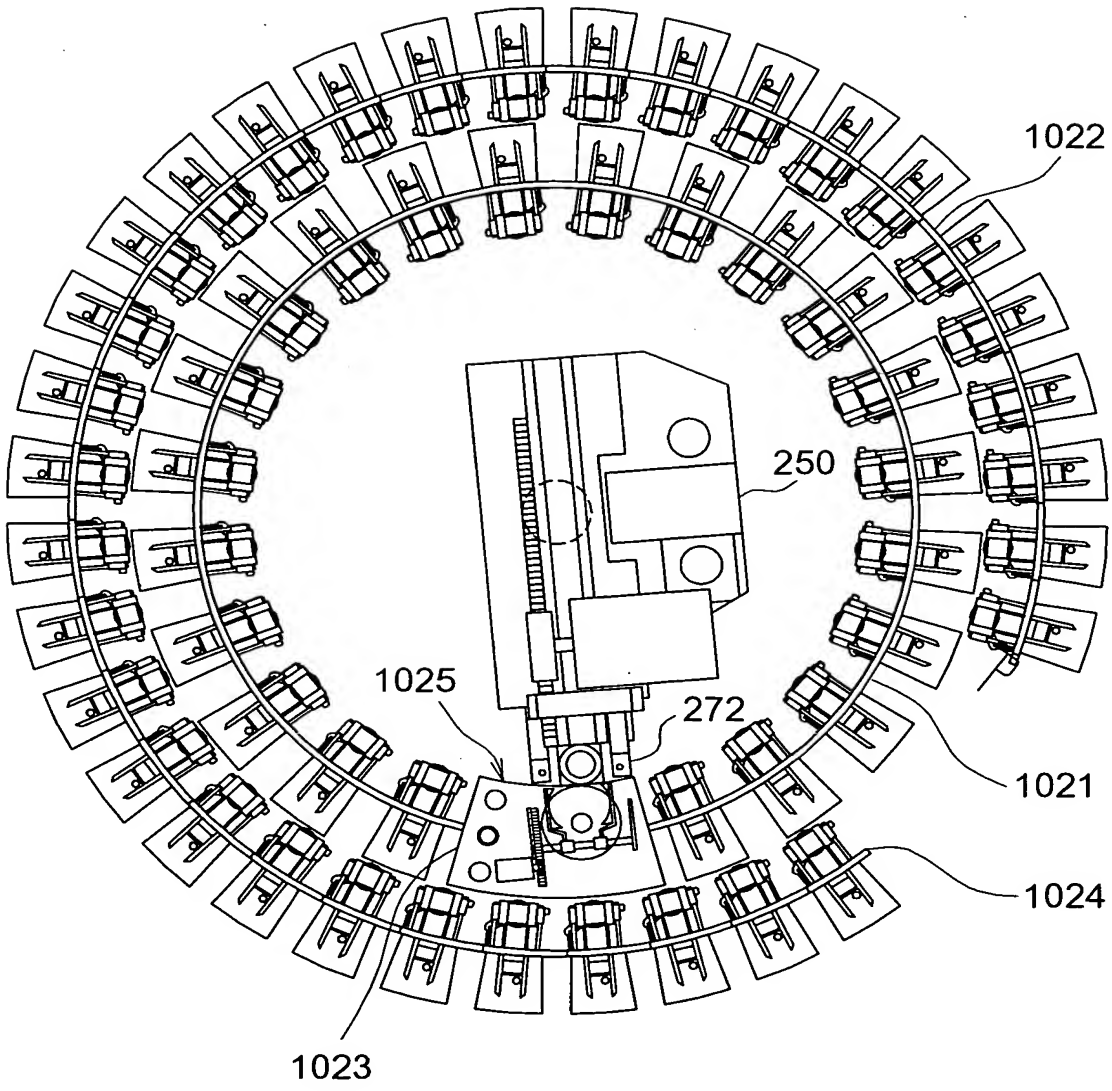


Fig.31

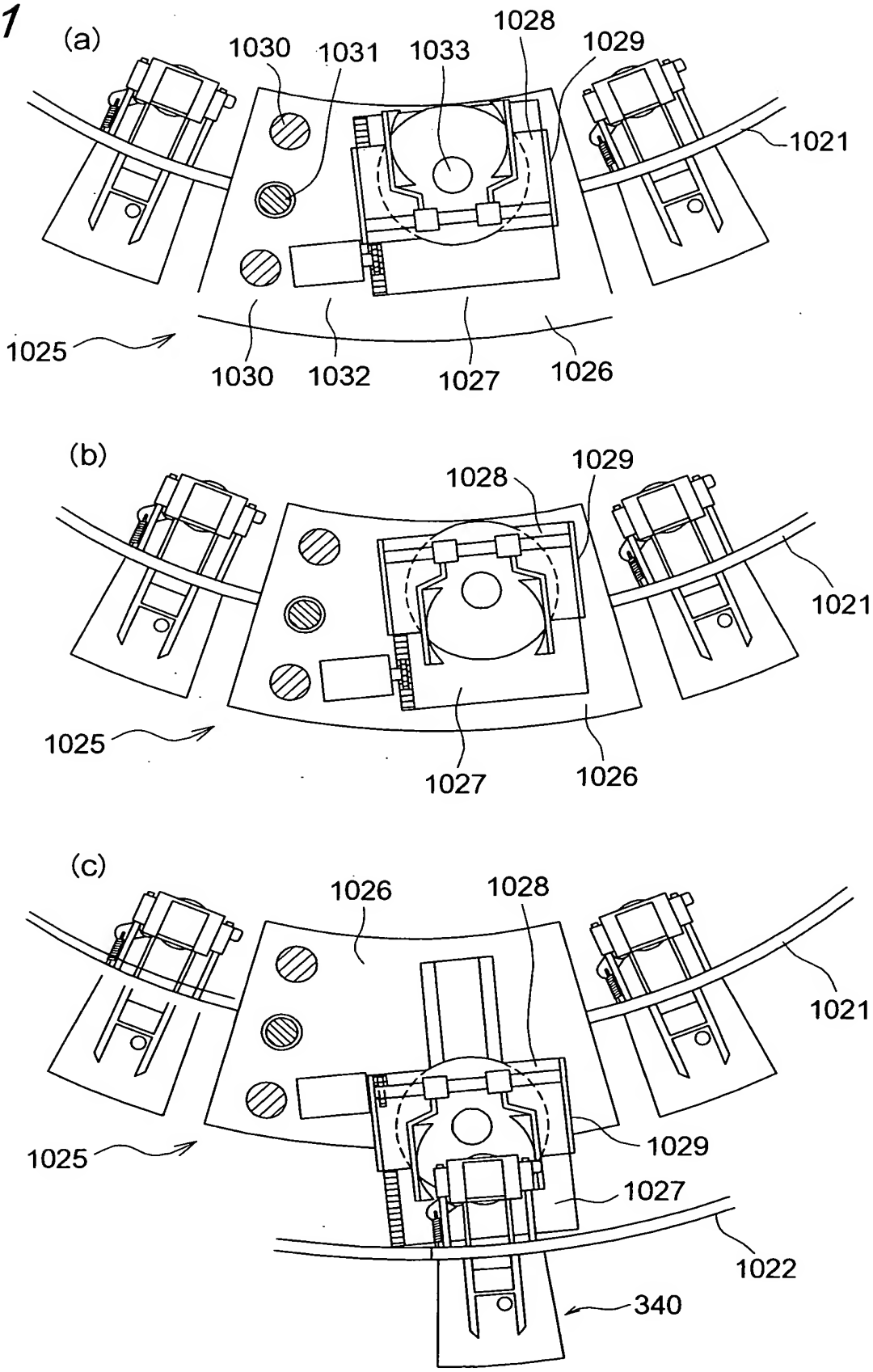

(a)
1030
1031
1033
1028
1029
1021
1025
1030
1032
1027
1026
(b)
1028
1029
1021
1025
1027
1026
(c)
1026
1028
1021
1025
1029
1027
1022
340

Fig.32

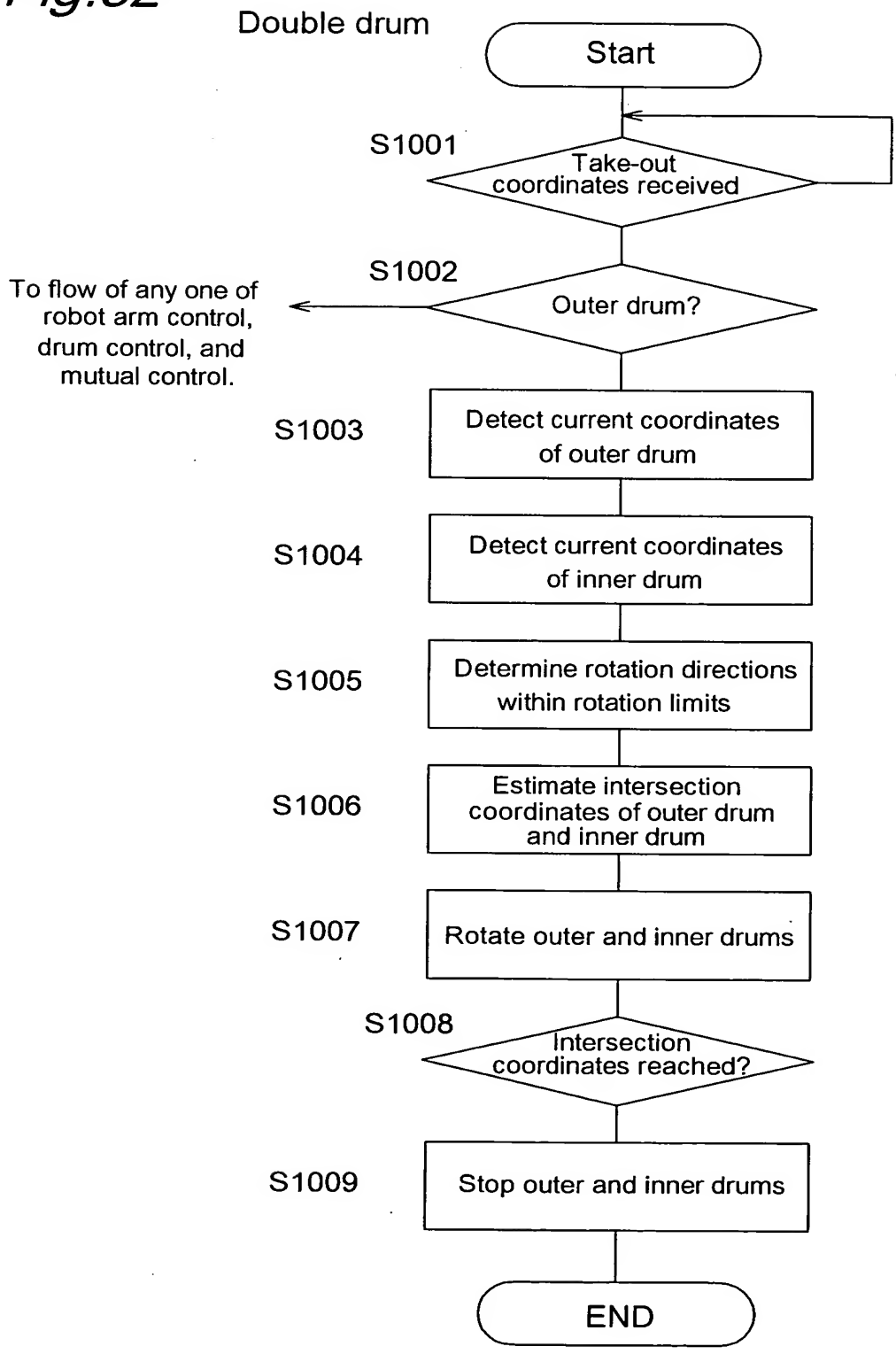

Double drum
Start
S1001
Take-out coordinates received
S1002
Outer drum?
To flow of any one of robot arm control, drum control, and mutual control.
S1003
Detect current coordinates of outer drum
S1004
Detect current coordinates of inner drum
S1005
Determine rotation directions within rotation limits
S1006
Estimate intersection coordinates of outer drum and inner drum
S1007
Rotate outer and inner drums
S1008
Intersection coordinates reached?
S1009
Stop outer and inner drums
END

Fig.33

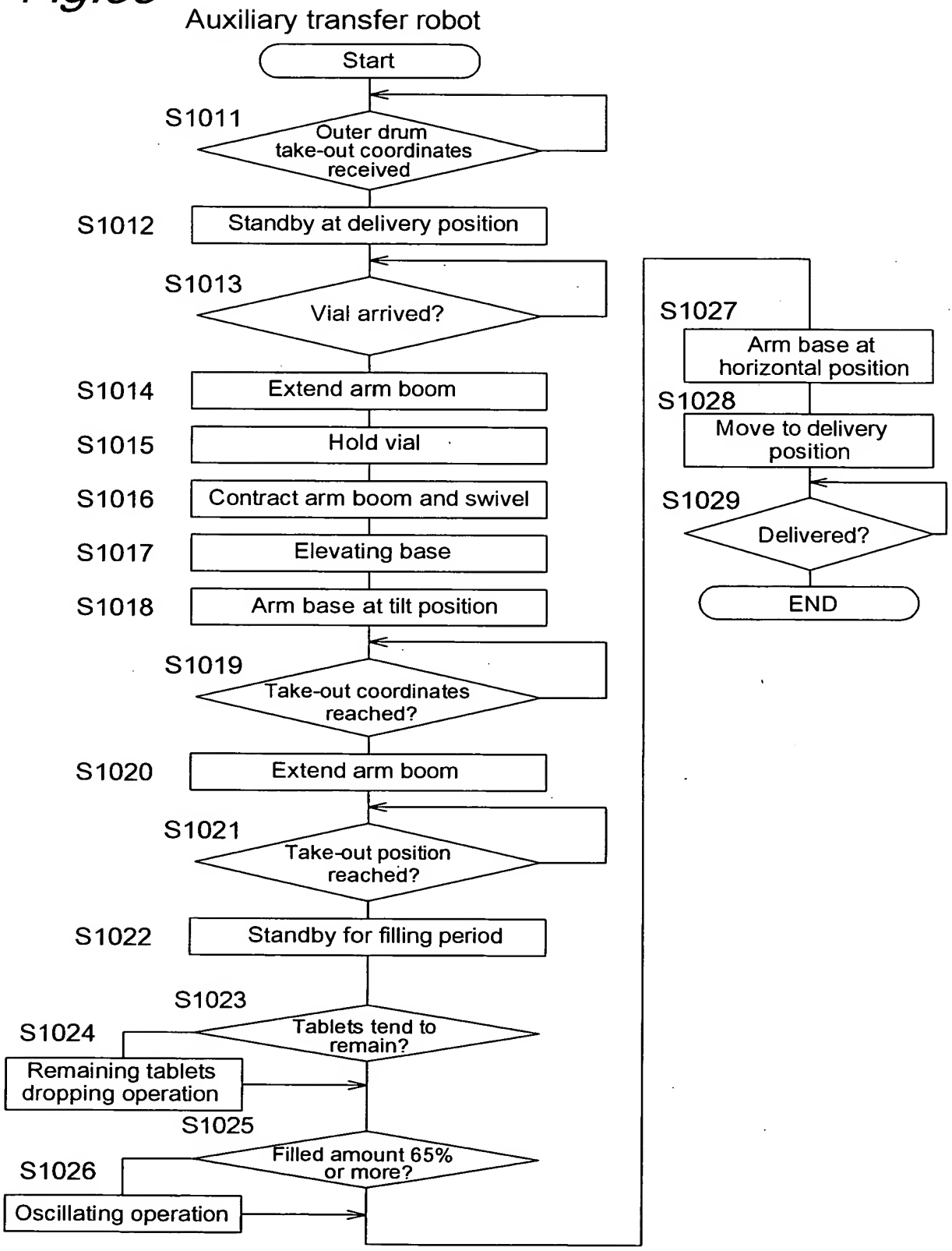

Auxiliary transfer robot
Start
S1011
Outer drum take-out coordinates received
S1012
Standby at delivery position
S1013
Vial arrived?
S1014
Extend arm boom
S1015
Hold vial
S1016
Contract arm boom and swivel
S1017
Elevating base
S1018
Arm base at tilt position
S1019
Take-out coordinates reached?
S1020
Extend arm boom
S1021
Take-out position reached?
S1022
Standby for filling period
S1023
Tablets tend to remain?
S1024
Remaining tablets dropping operation
S1025
Filled amount 65% or more?
S1026
Oscillating operation
S1027
Arm base at horizontal position
S1028
Move to delivery position
S1029
Delivered?
END

Fig.34

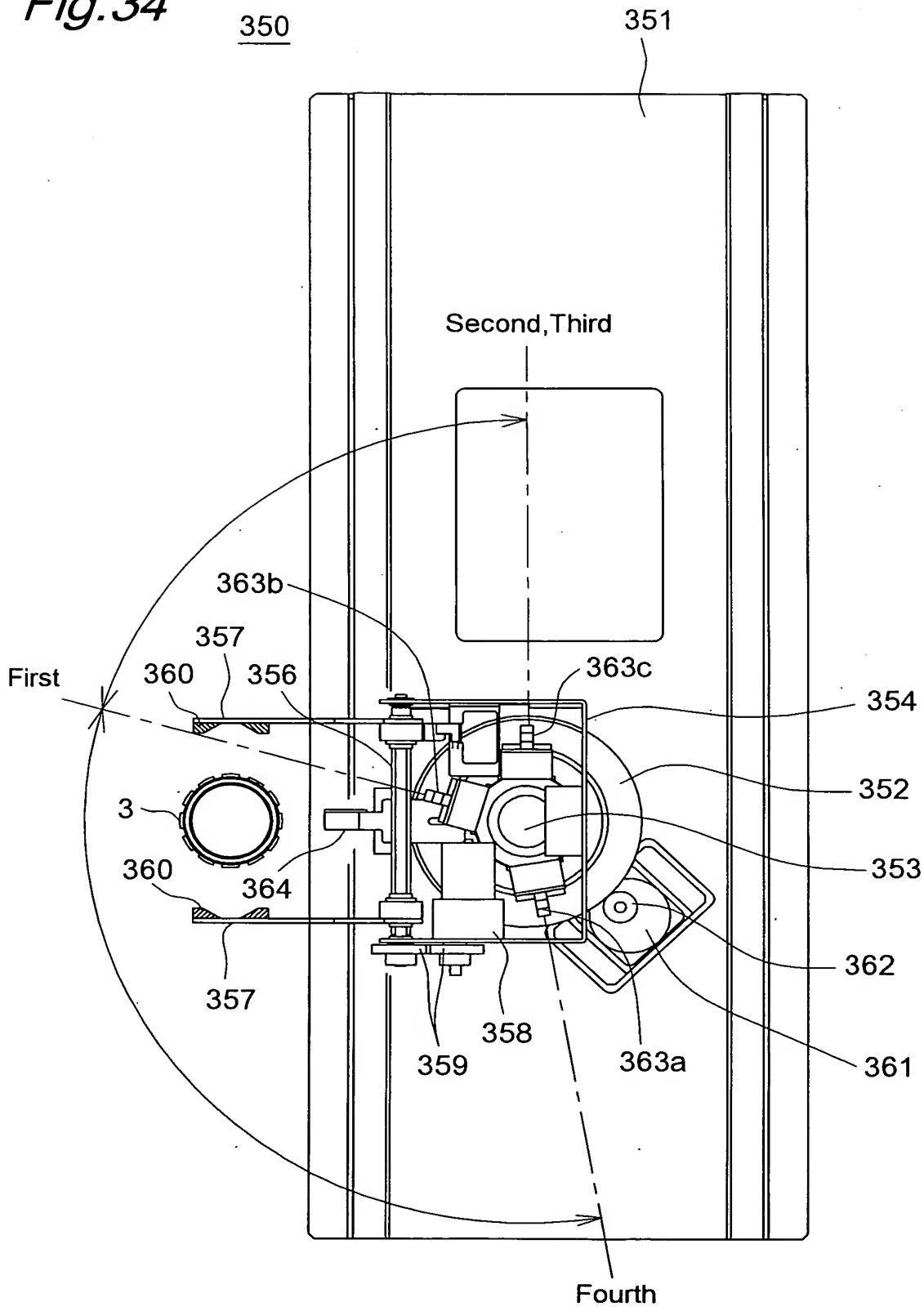

350
351
Second,Third
363b
357
First
360
356
363c
354
352
3
353
360
364
362
357
358
361
359
363a
Fourth

Fig.35

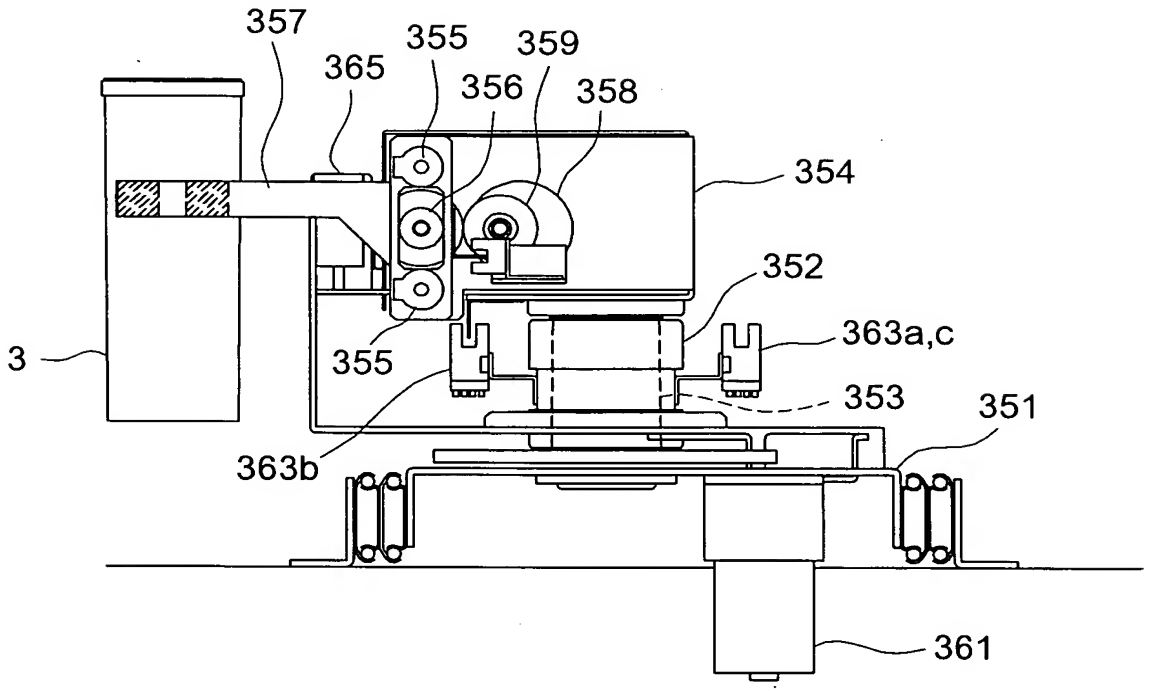


Fig.36

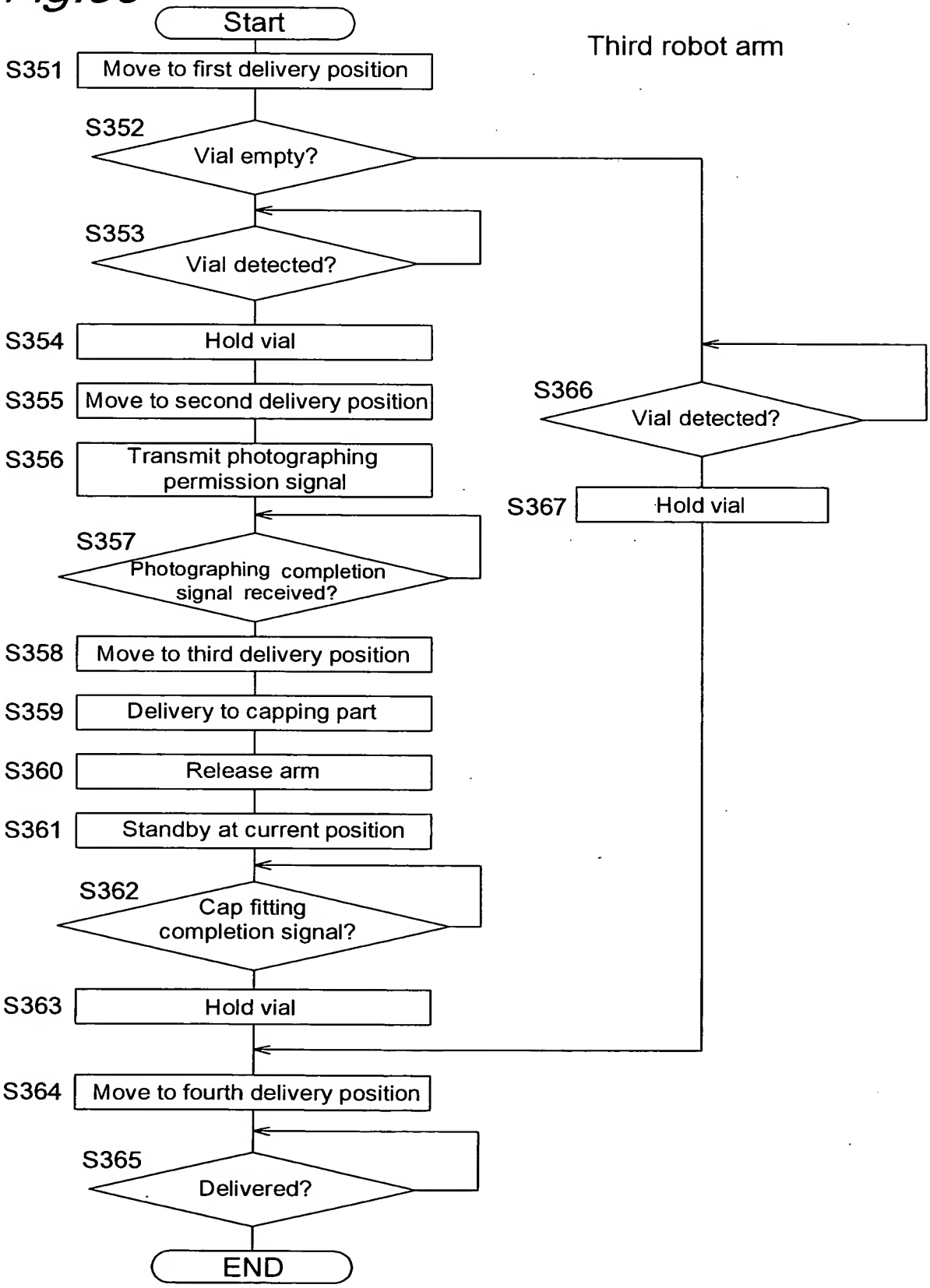

Start
Third robot arm
S351
Move to first delivery position
S352
Vial empty?
S353
Vial detected?
S354
Hold vial
S355
Move to second delivery position
S356
Transmit photographing permission signal
S357
Photographing completion signal received?
S358
Move to third delivery position
S359
Delivery to capping part
S360
Release arm
S361
Standby at current position
S362
Cap fitting completion signal?
S363
Hold vial
S364
Move to fourth delivery position
S365
Delivered?
END
S366
Vial detected?
S367
Hold vial

Fig.37

Photographing initialization

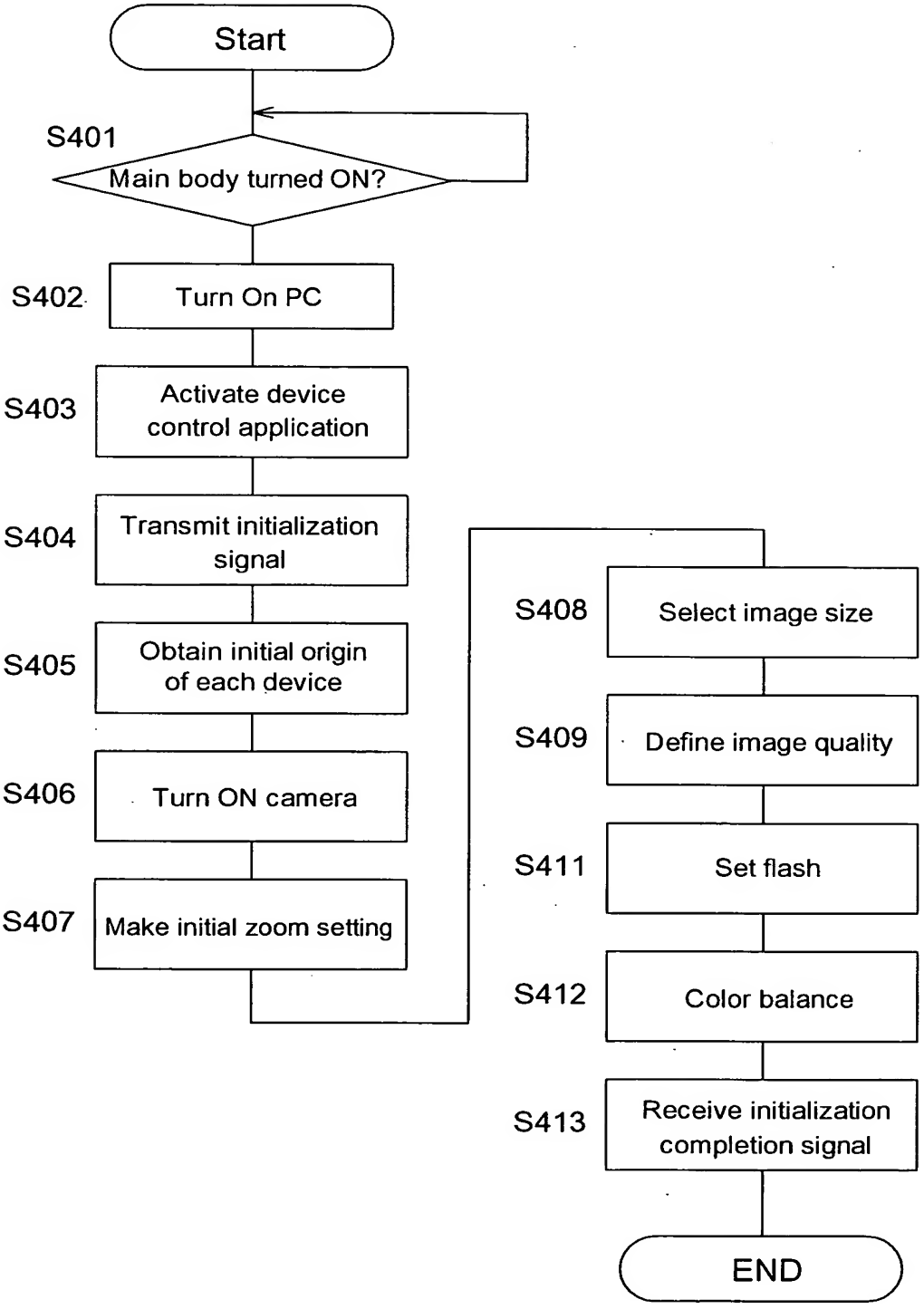


Fig.38

Photographing control

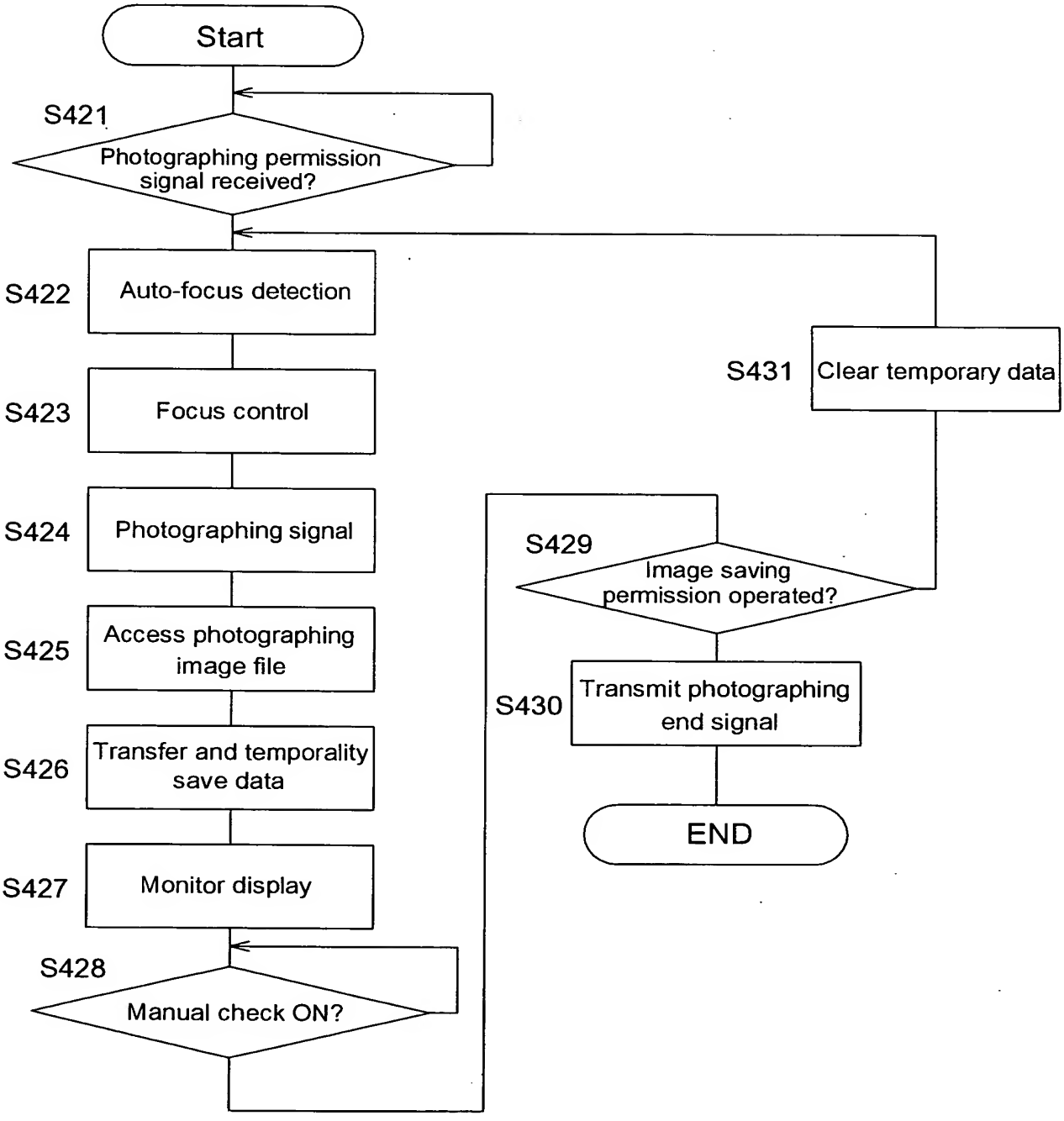


Fig.39

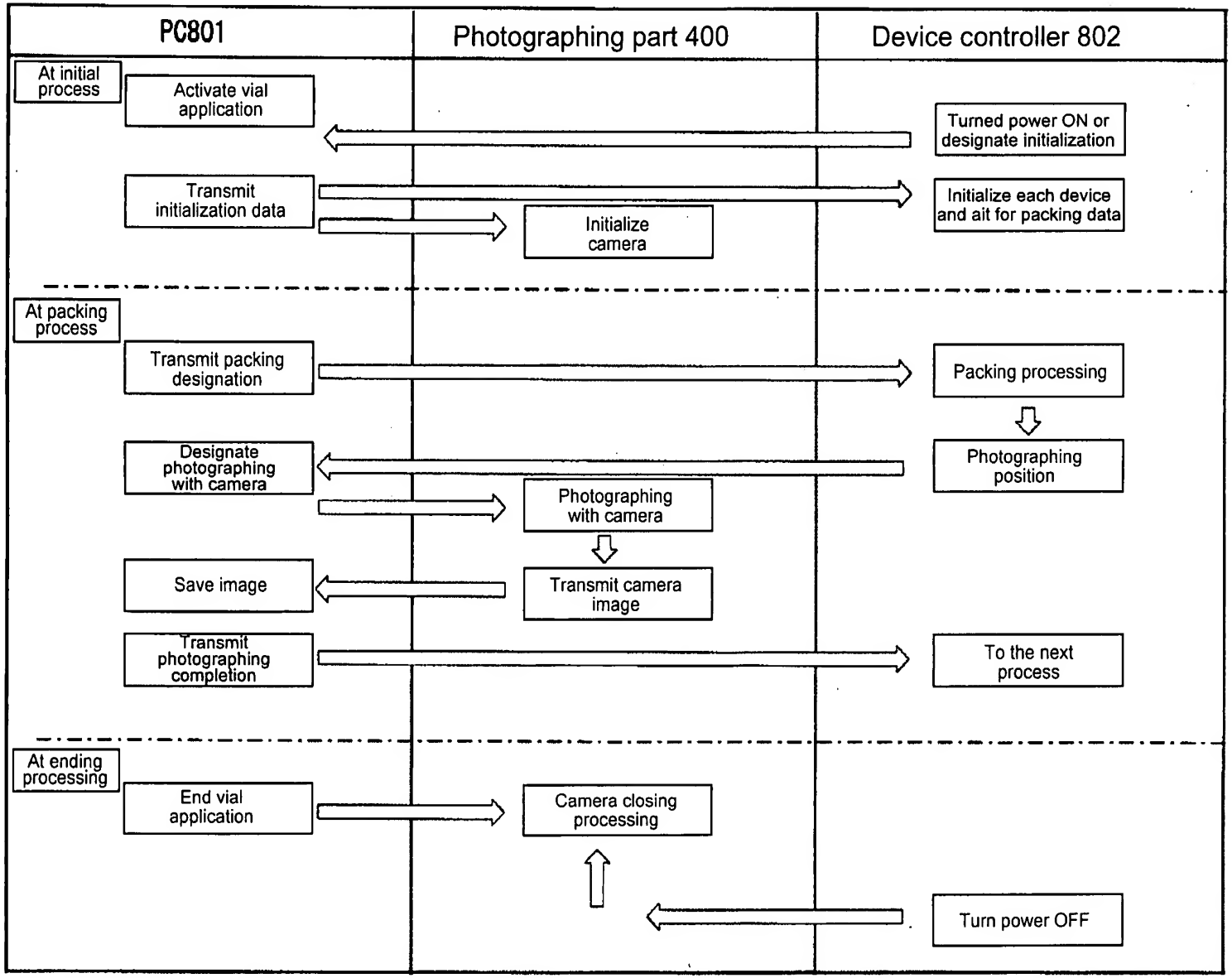

PC801
Photographing part 400
Device controller 802
At initial process
Activate vial application
Turned power ON or designate initialization
Transmit initialization data
Initialize each device and ait for packing data
Initialize camera
At packing process
Transmit packing designation
Packing processing
Designate photographing with camera
Photographing position
Photographing with camera
Save image
Transmit camera image
Transmit photographing completion
To the next process
At ending processing
End vial application
Camera closing processing
Turn power OFF

Fig.40

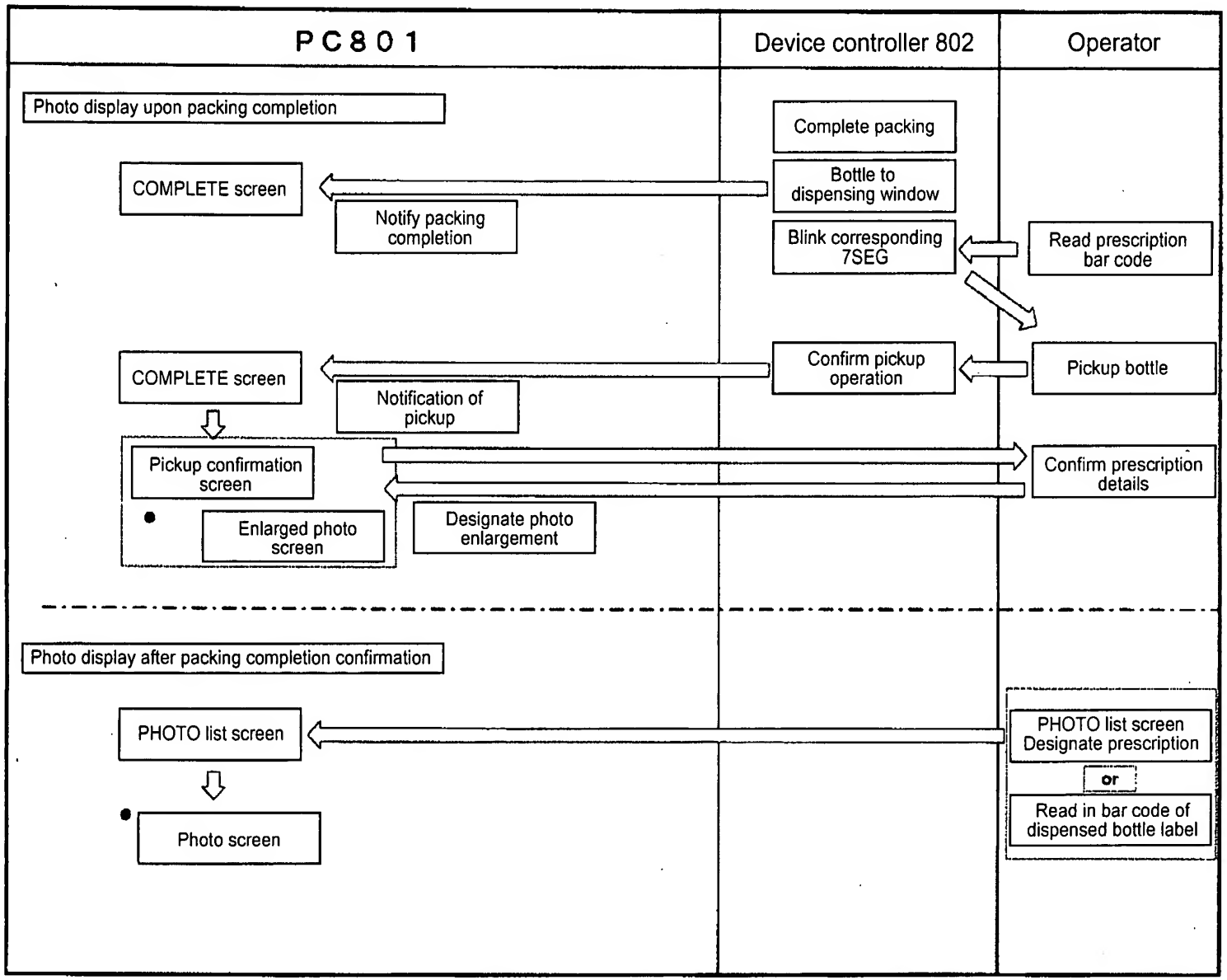

PC801
Device controller 802
Operator
Photo display upon packing completion
Complete packing
COMPLETE screen
Bottle to dispensing window
Notify packing completion
Blink corresponding 7SEG
Read prescription bar code
COMPLETE screen
Confirm pickup operation
Pickup bottle
Notification of pickup
Pickup confirmation screen
Confirm prescription details
Enlarged photo screen
Designate photo enlargement
Photo display after packing completion confirmation
PHOTO list screen
PHOTO list screen Designate prescription
or
Read in bar code of dispensed bottle label
Photo screen

Fig.41A

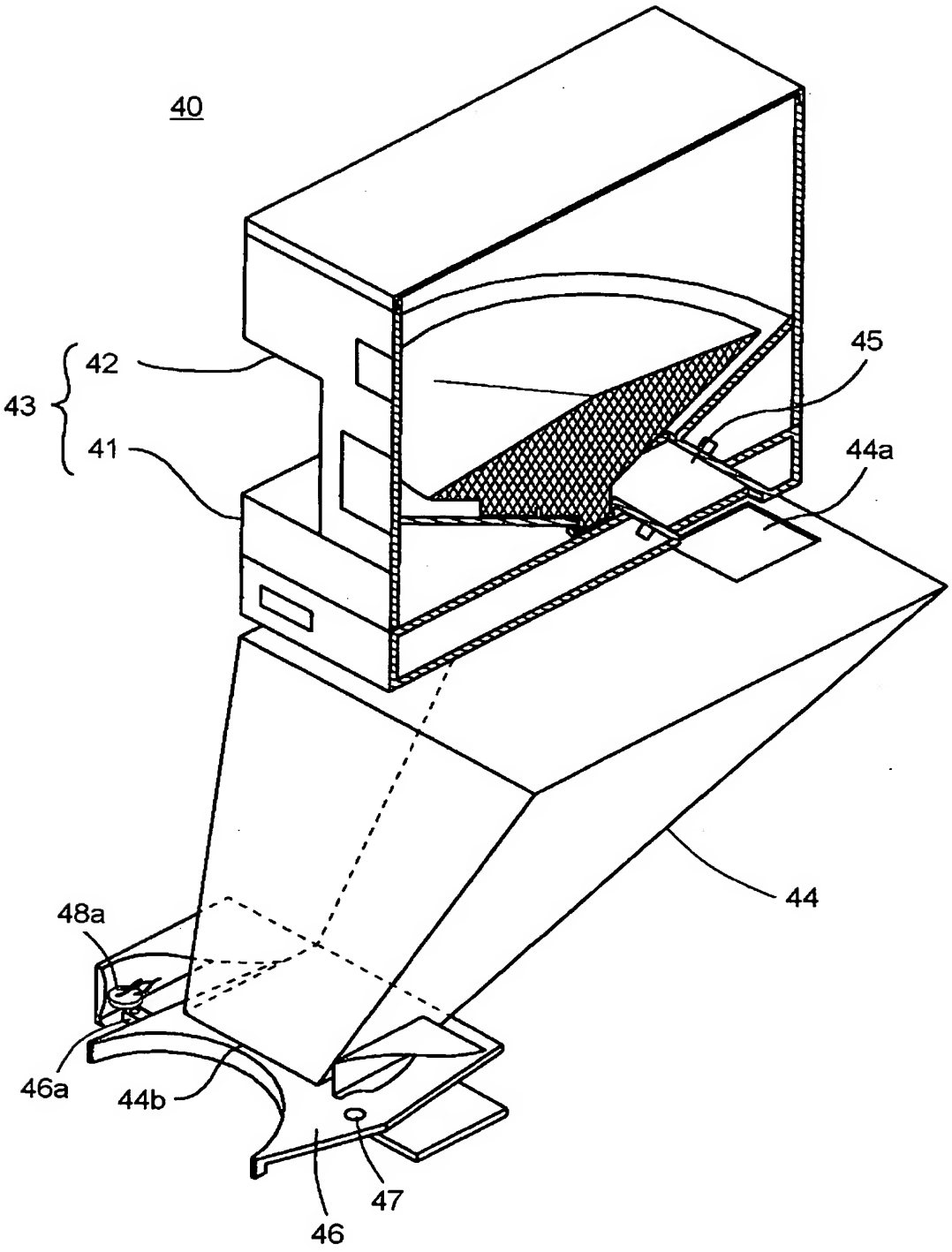


Fig.41B

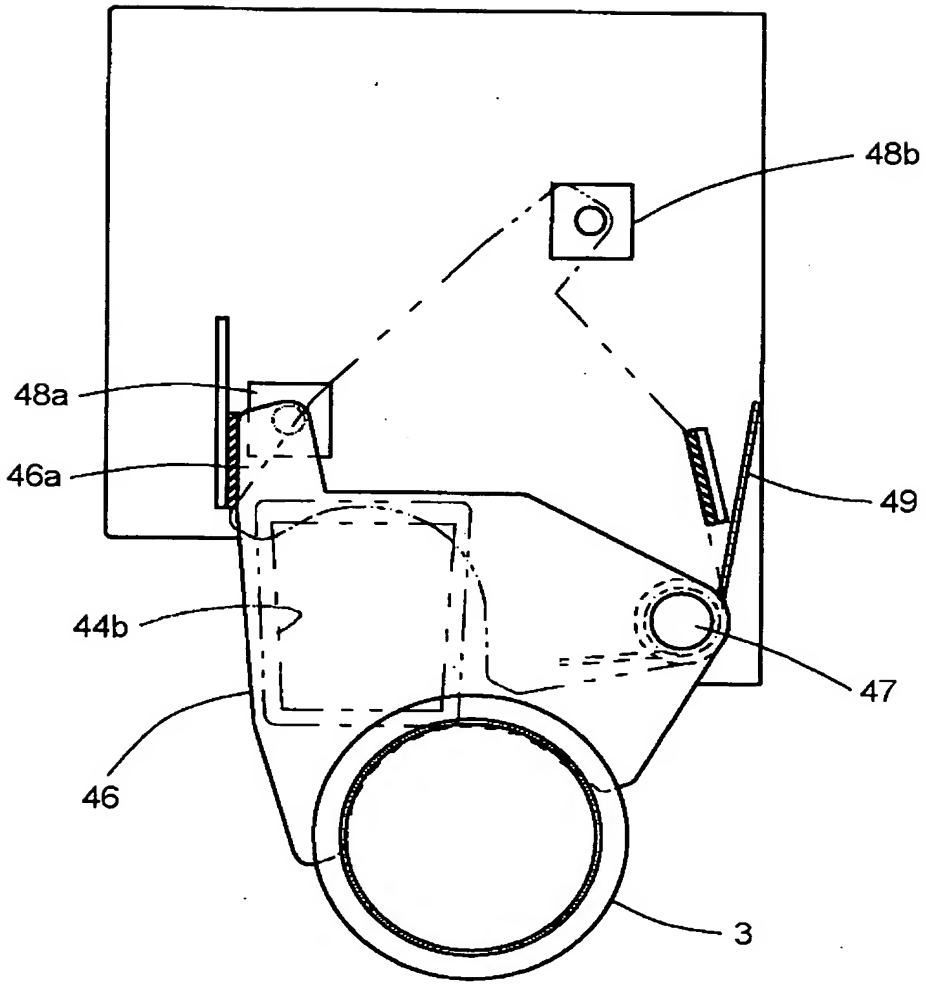


Fig.42

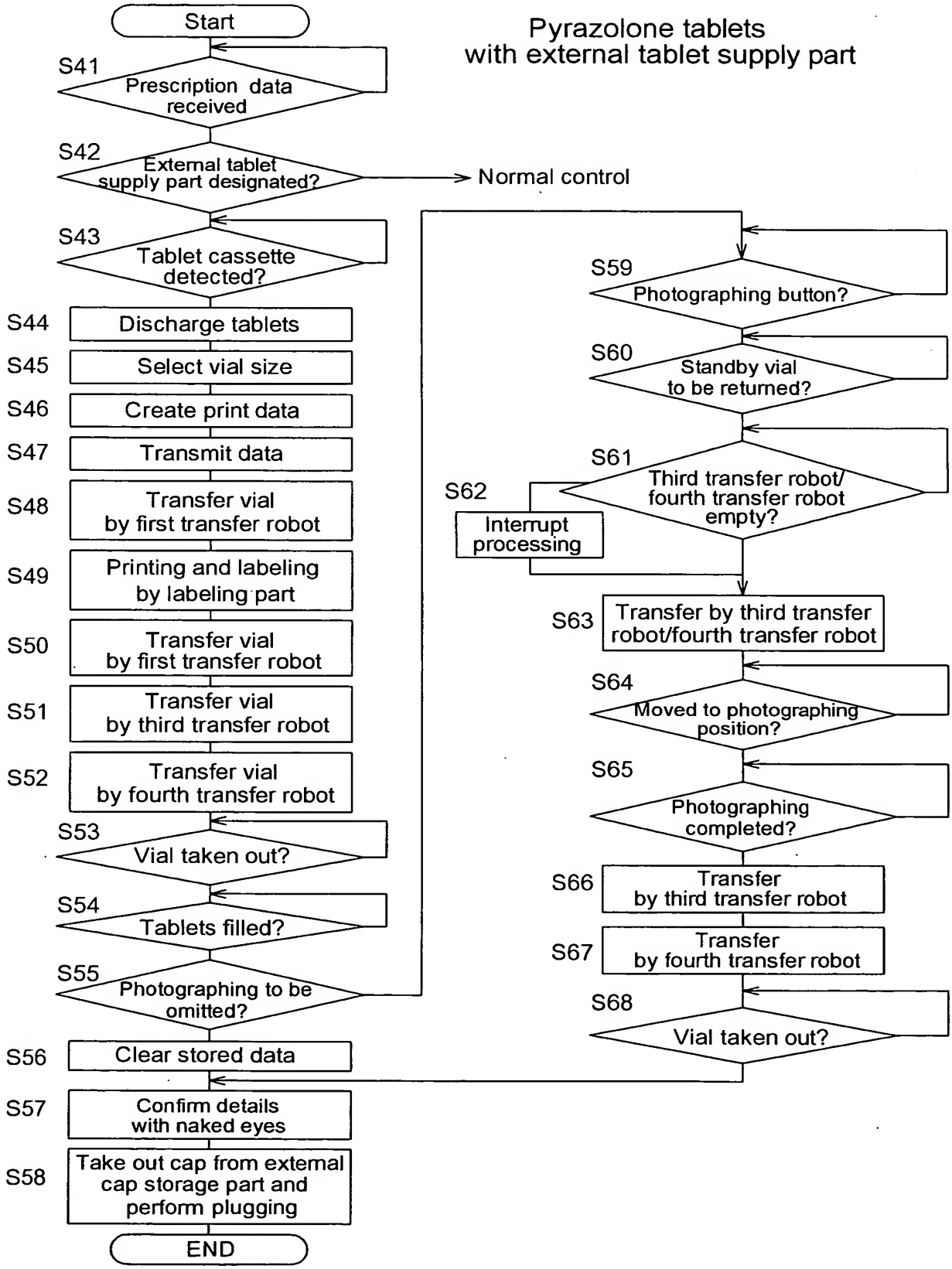

Start
Pyrazolone tablets
with external tablet supply part
S41
Prescription data received
S42
External tablet supply part designated?
Normal control
S43
Tablet cassette detected?
S44
Discharge tablets
S45
Select vial size
S46
Create print data
S47
Transmit data
S48
Transfer vial by first transfer robot
S49
Printing and labeling by labeling part
S50
Transfer vial by first transfer robot
S51
Transfer vial by third transfer robot
S52
Transfer vial by fourth transfer robot
S53
Vial taken out?
S54
Tablets filled?
S55
Photographing to be omitted?
S56
Clear stored data
S57
Confirm details with naked eyes
S58
Take out cap from external cap storage part and perform plugging
END
S59
Photographing button?
S60
Standby vial to be returned?
S61
Third transfer robot/ fourth transfer robot empty?
S62
Interrupt processing
S63
Transfer by third transfer robot/fourth transfer robot
S64
Moved to photographing position?
S65
Photographing completed?
S66
Transfer by third transfer robot
S67
Transfer by fourth transfer robot
S68
Vial taken out?

Fig.43

0.0 Main menu

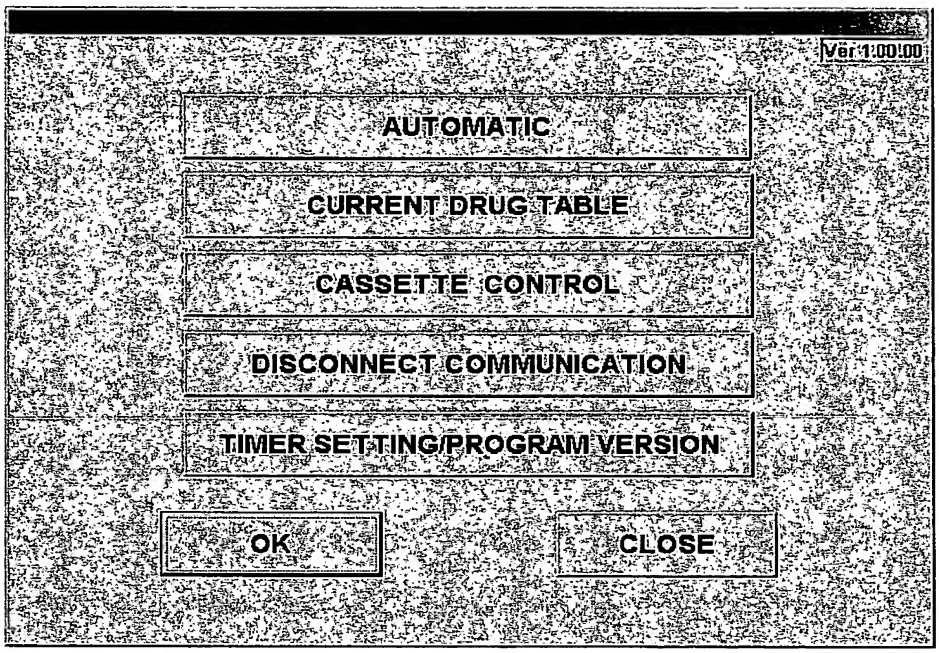
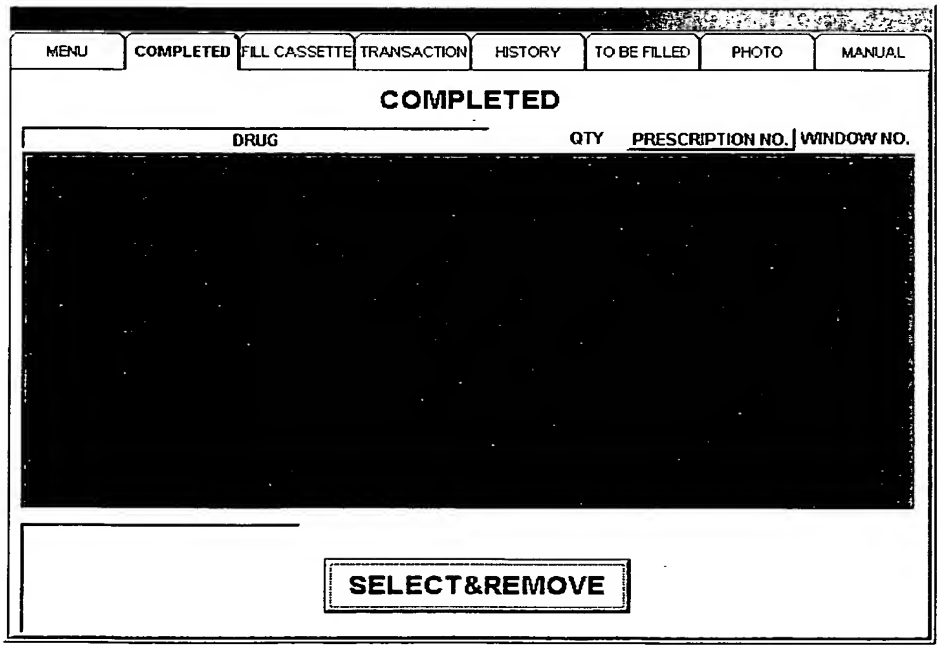


Fig.44

1.0 Automatic dispensing screen



BEST AVAILABLE COPY

Fig.45

1.1 In-process prescription list screen

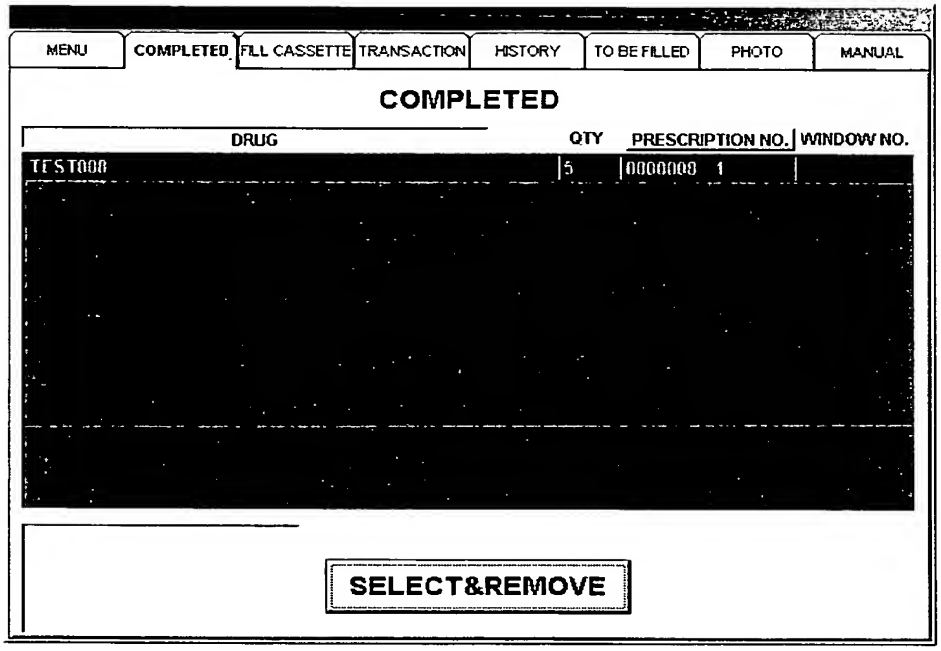
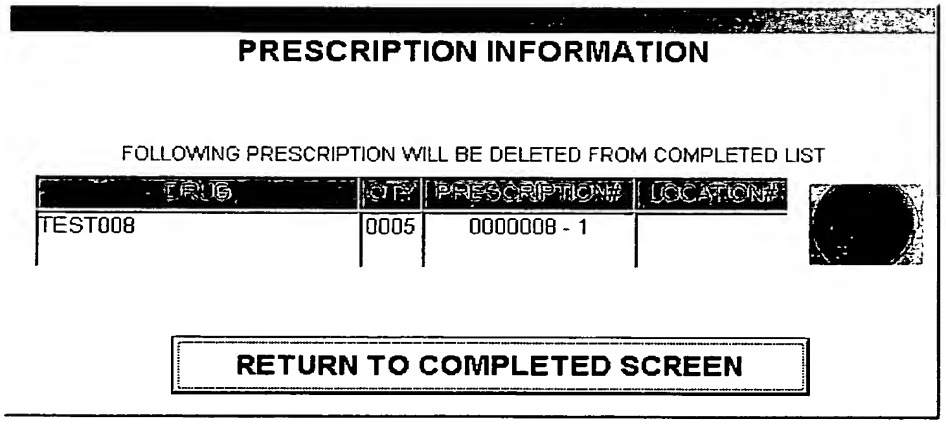


Fig.46

1.1.1 Vial take-out error confirmation screen



BEST AVAILABLE COPY

Fig.47 1.1.1.1 Vial interior photo display device

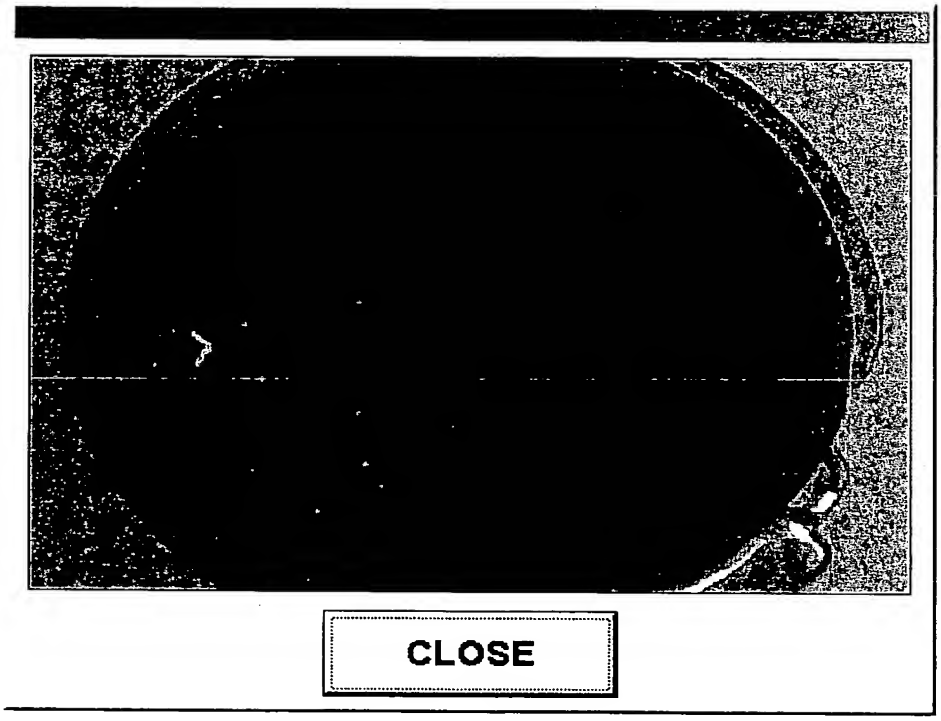
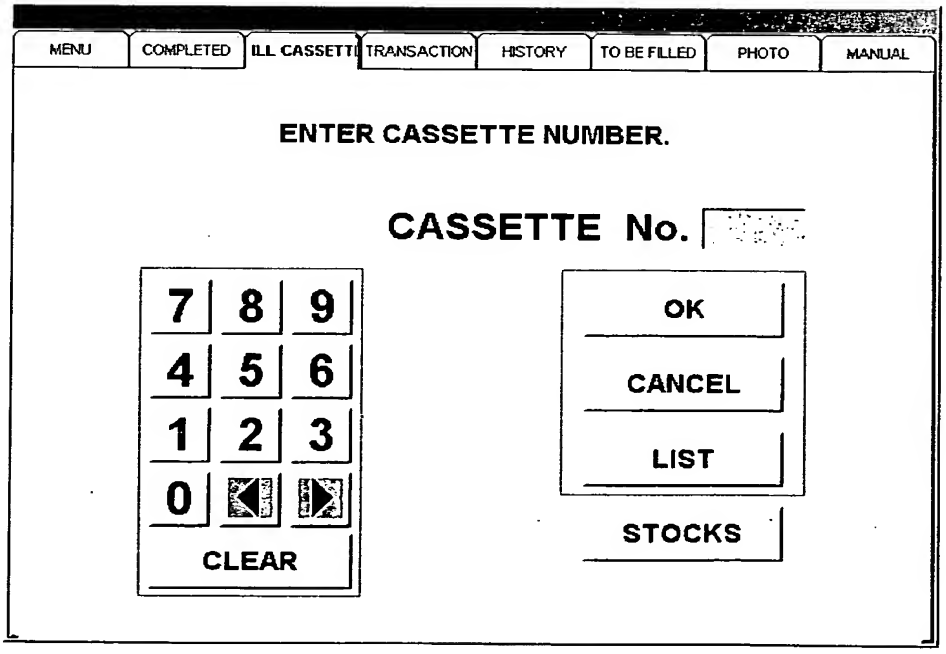


Fig.48 1.2 Drug filling cassette specification screen



BEST AVAILABLE COPY

Fig.49 1.2.1a New drug registration screen

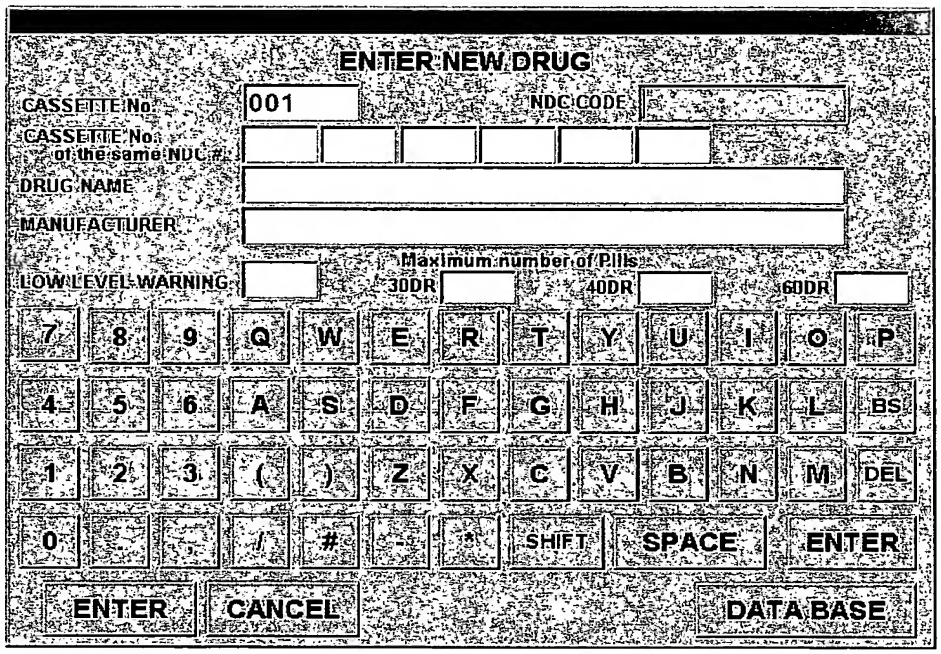
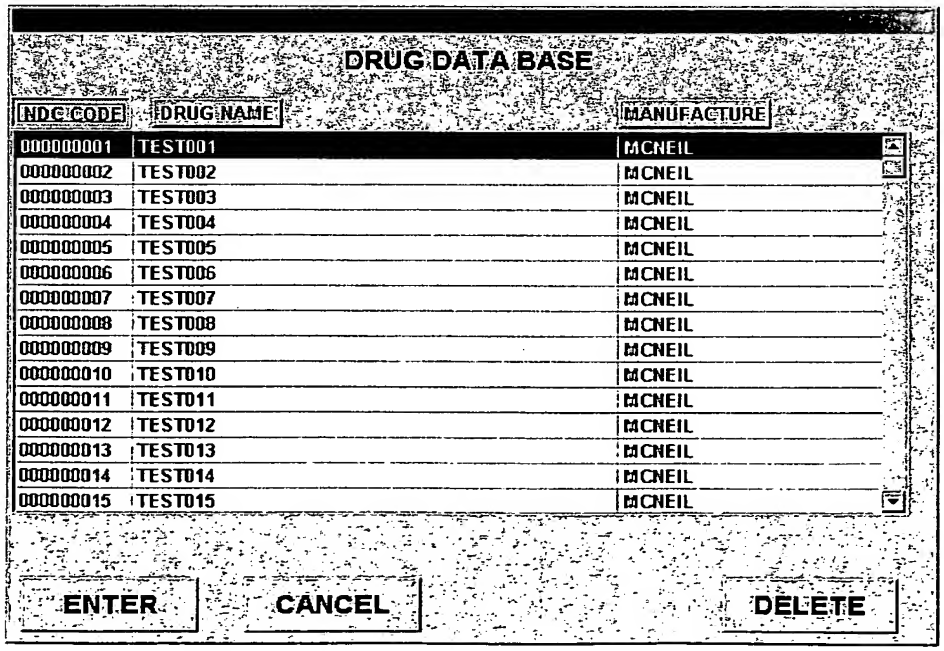


Fig.50 1.2.1a.1 Drug list display screen



BEST AVAILABLE COPY

Fig.51 1.2.1a.1.1 NDC master drug delete screen

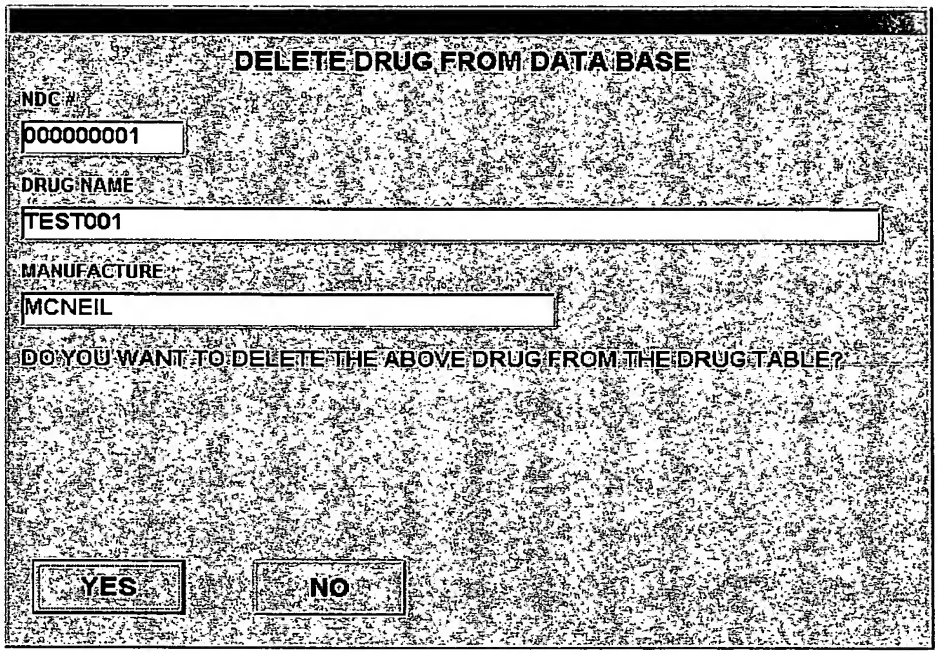
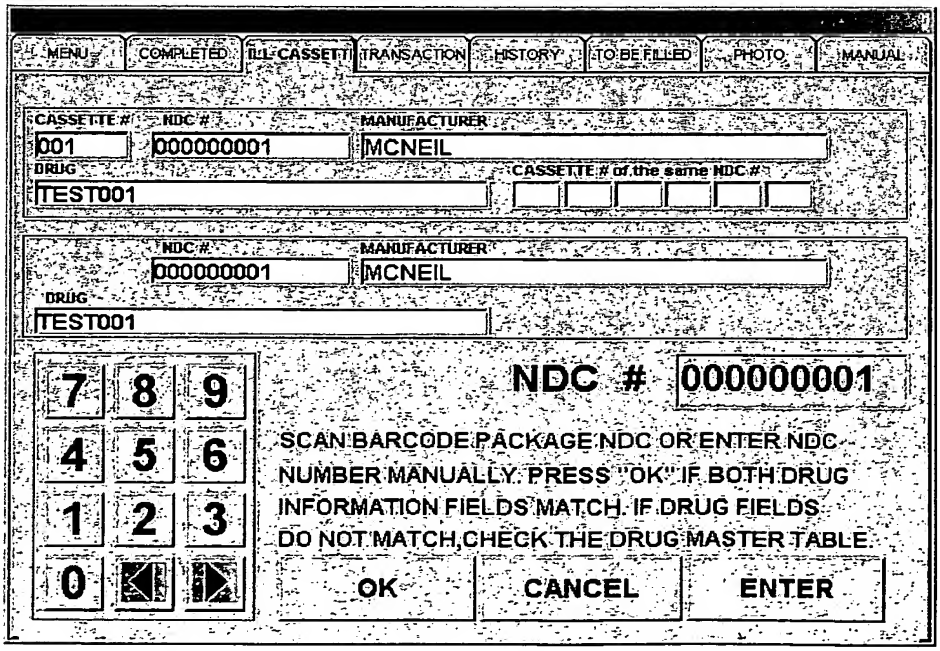


Fig.52 1.2.1b NDC code check screen



BEST AVAILABLE COPY

Fig.53 1.2.1b.1 Tablet filling screen

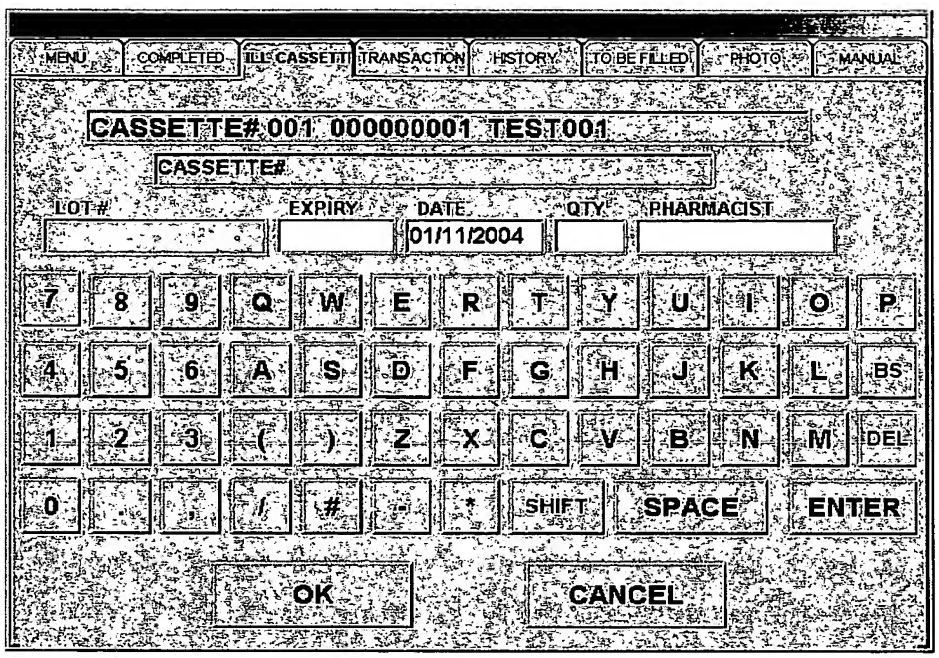
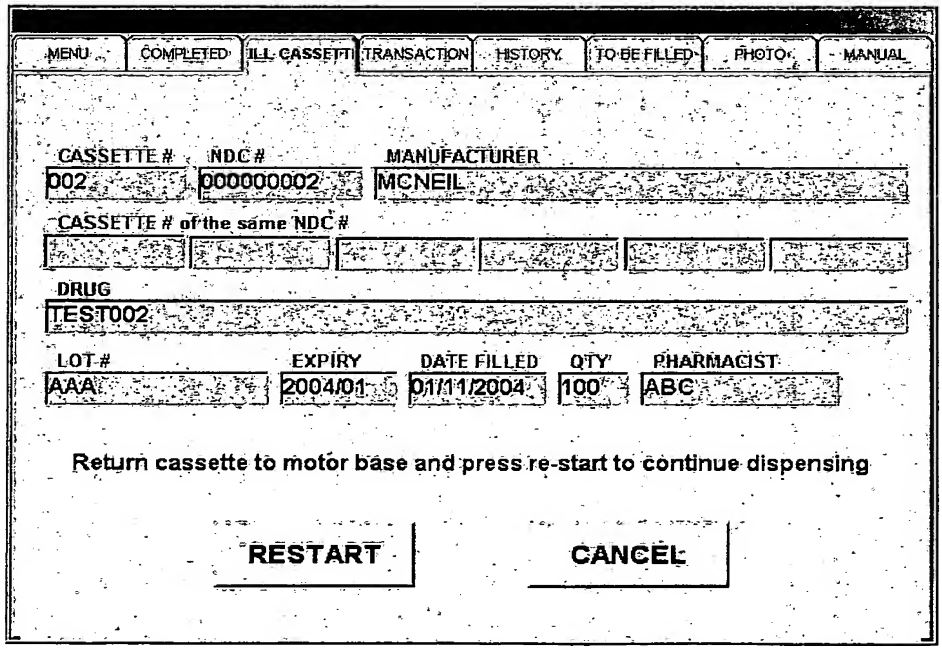


Fig.54 1.2.1b.1.1 Filling confirmation screen



BEST AVAILABLE COPY

Fig.55

1.2.2 Cassette list screen

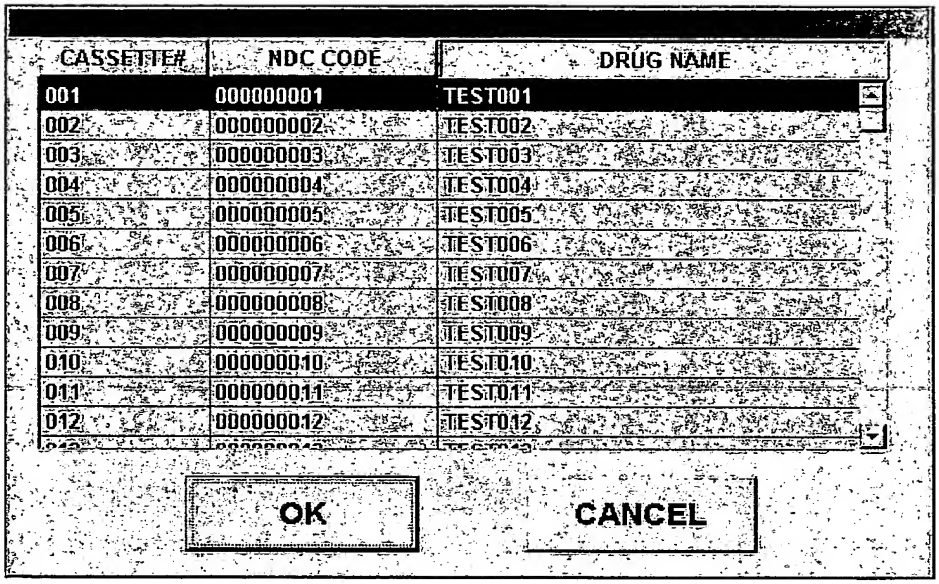
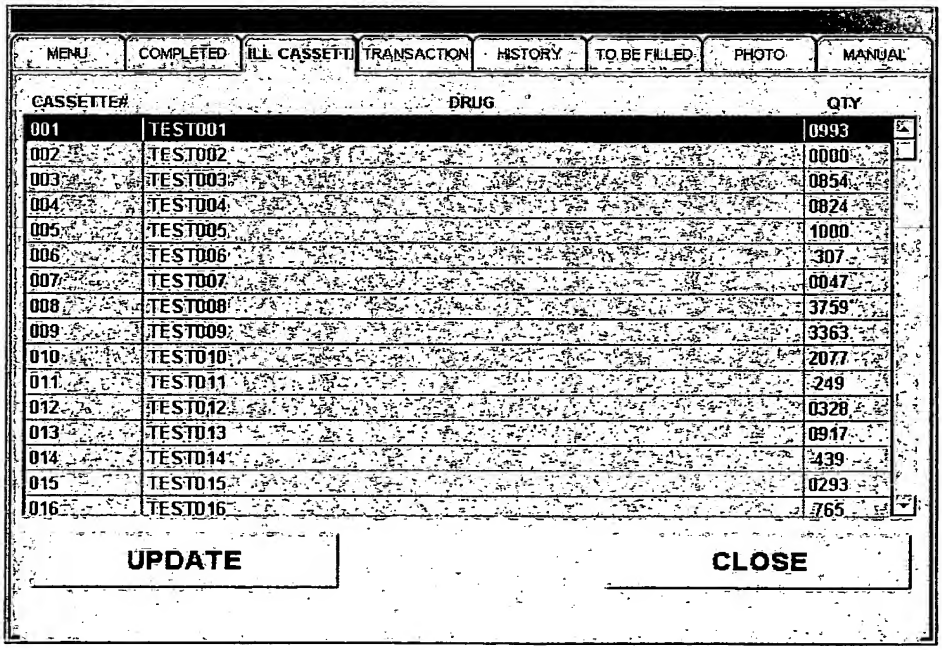


Fig.56

1.2.3 Cassette-by-cassette tablet inventory list screen



BEST AVAILABLE COPY

Fig.57 1.2.3.1 Tablet inventory change screen

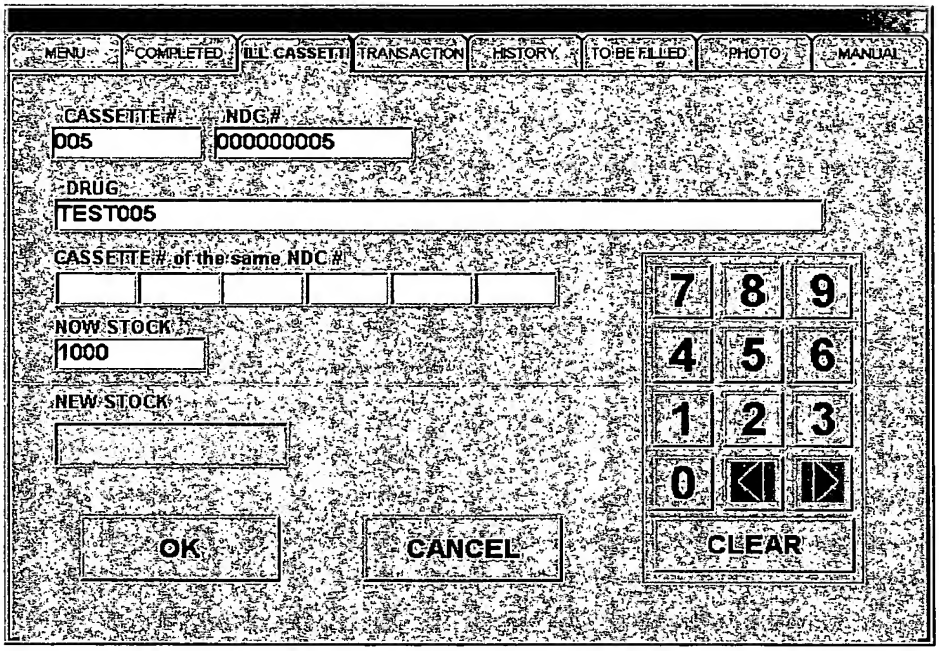
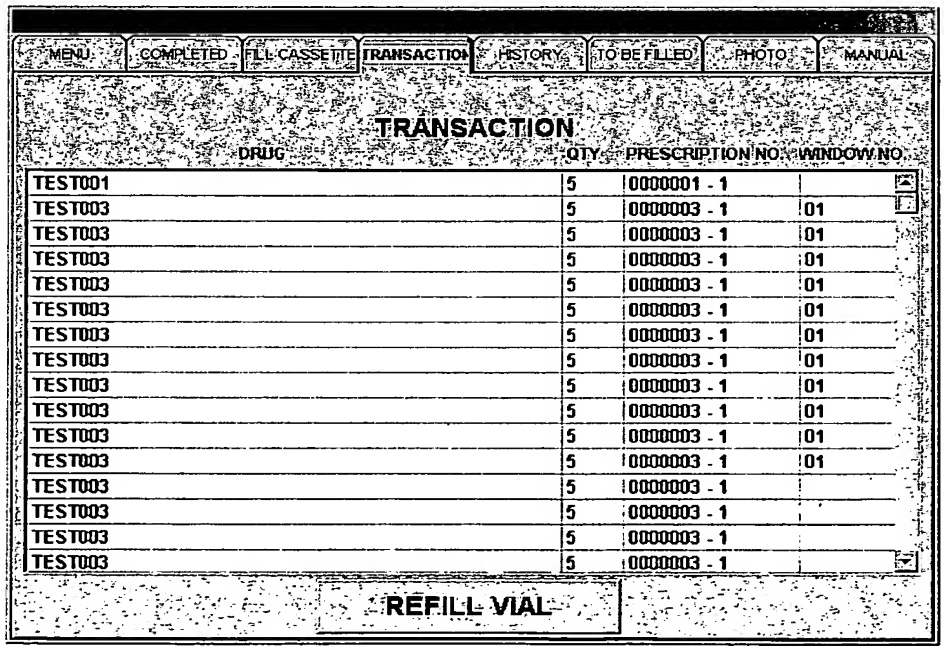


Fig.58 1.3 Processed prescription list screen



BEST AVAILABLE COPY

Fig.59 1.4 Filling history drug selection screen

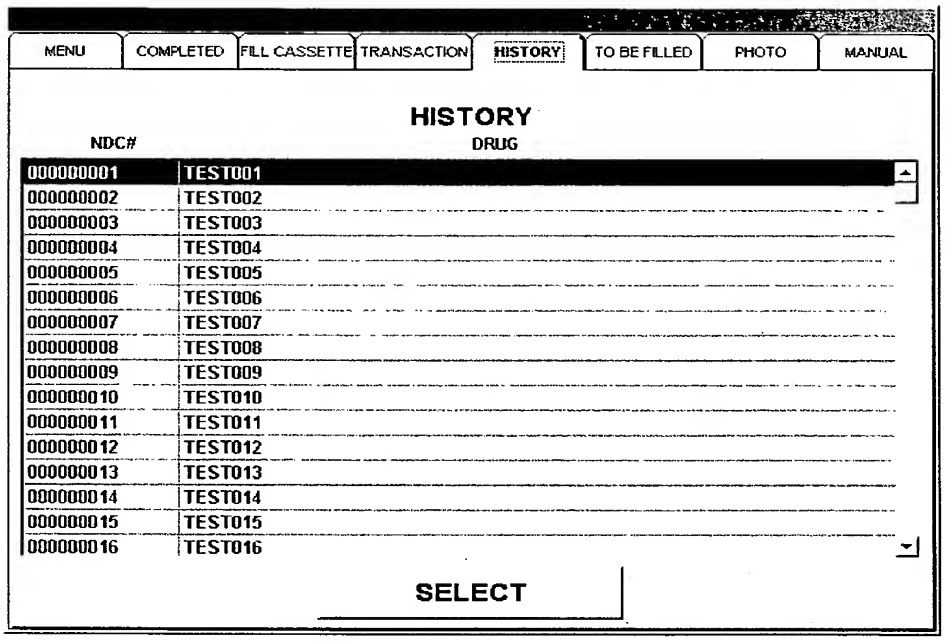
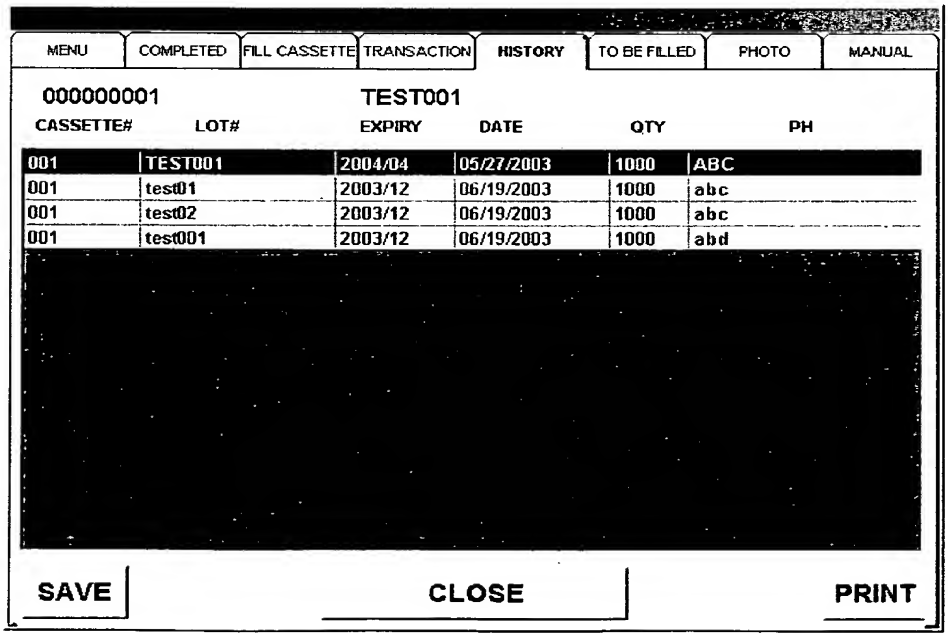


Fig.60 1.4.1 Filling history display screen



BEST AVAILABLE COPY

Fig.61 1.5 Dispensing machine not-yet-transmitted prescription list screen

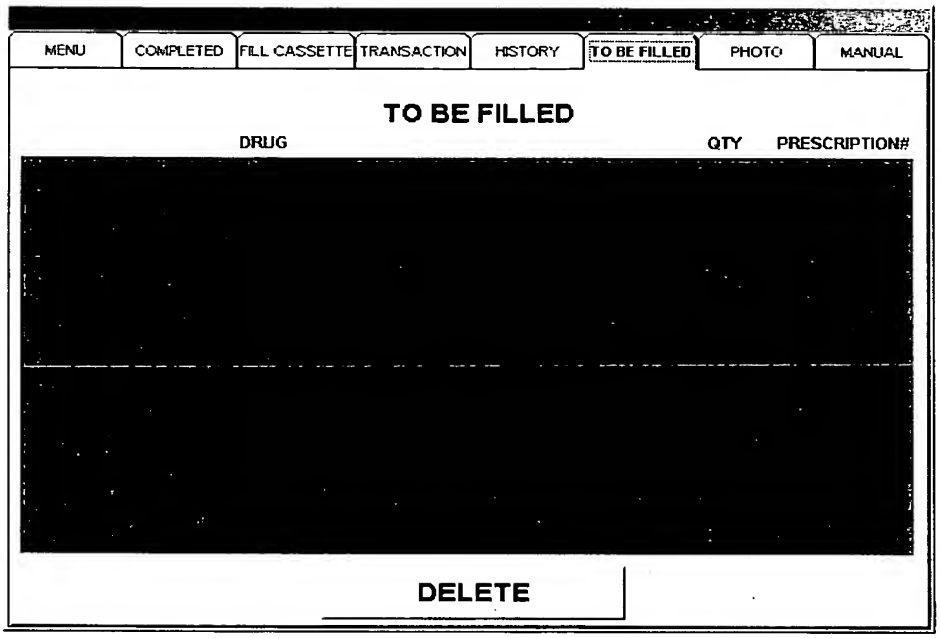
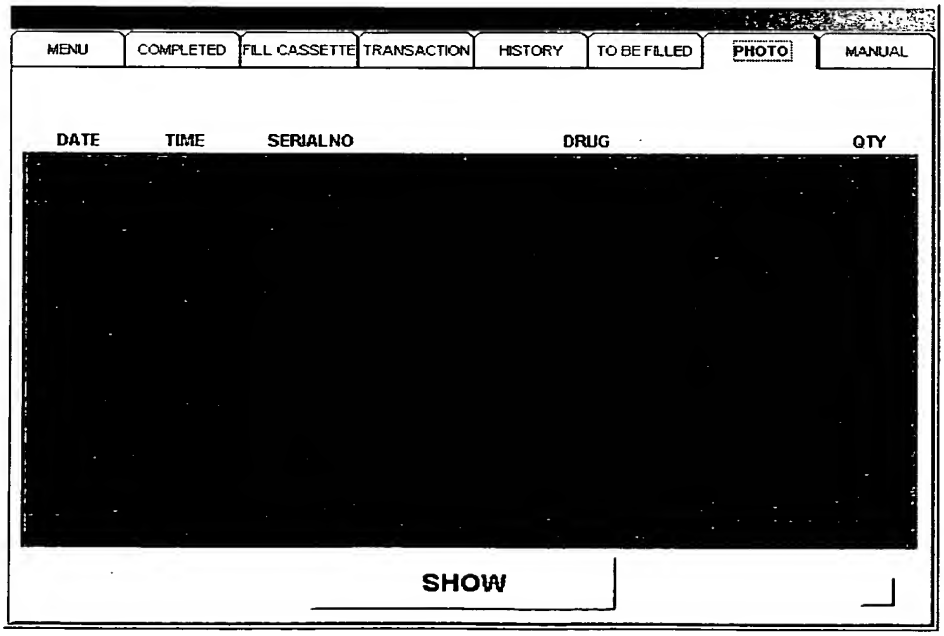


Fig.62 1.6 Dispensed vial photo list screen



BEST AVAILABLE COPY

Fig.63 1.6.1 Photo display screen

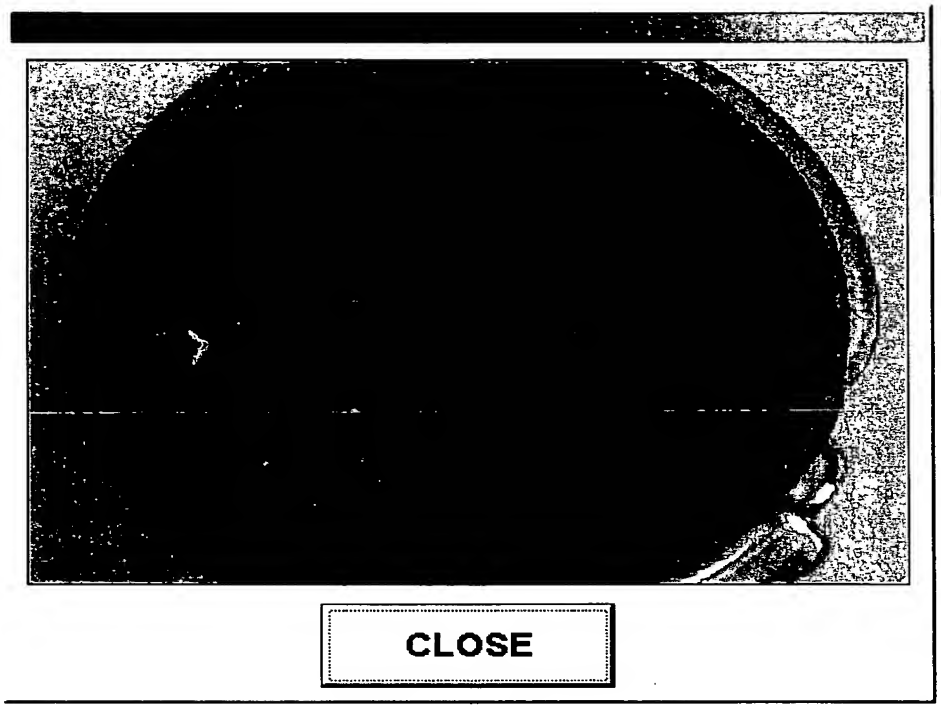
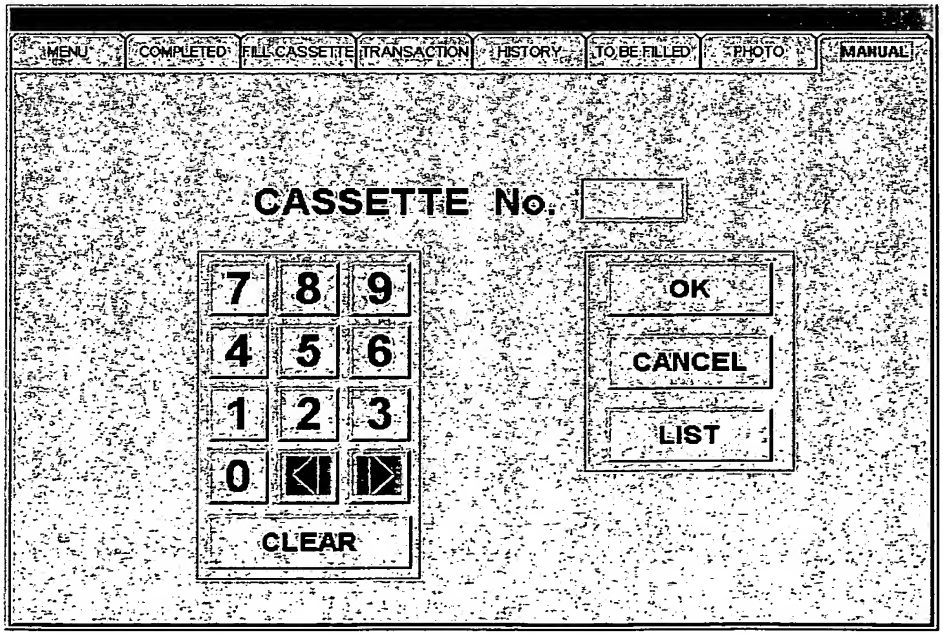


Fig.64 1.7 Manual dispensing cassette designation screen



BEST AVAILABLE COPY

Fig.65

1.7.1 Manual dispensed tablet quantity designation screen

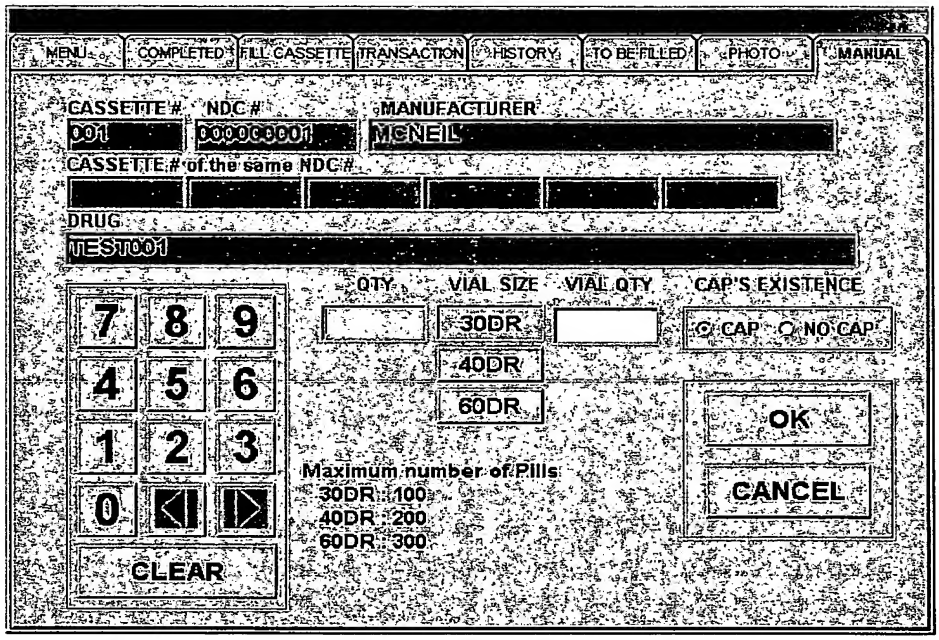
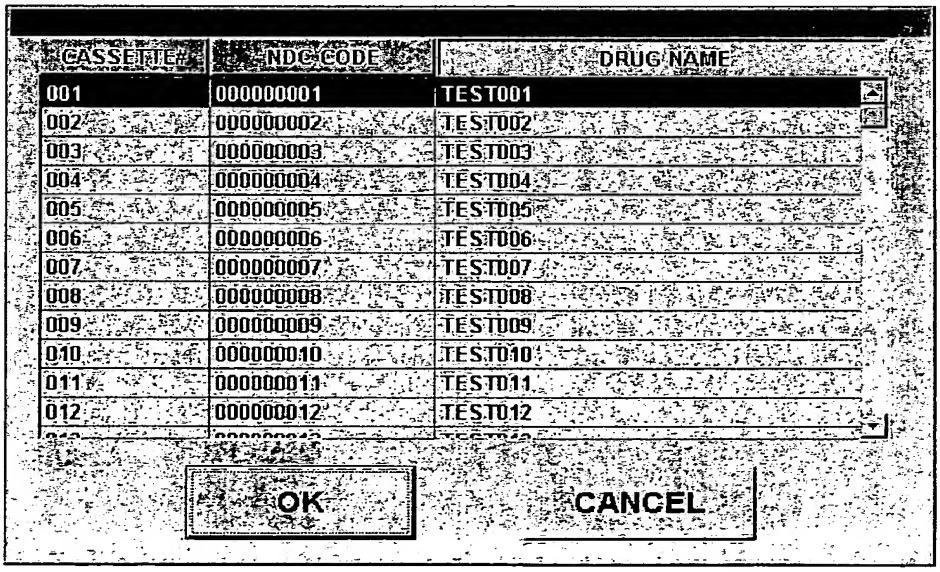


Fig.66

1.7.2 Cassette list screen



BEST AVAILABLE COPY

Fig.67 2.0 Drug table list screen

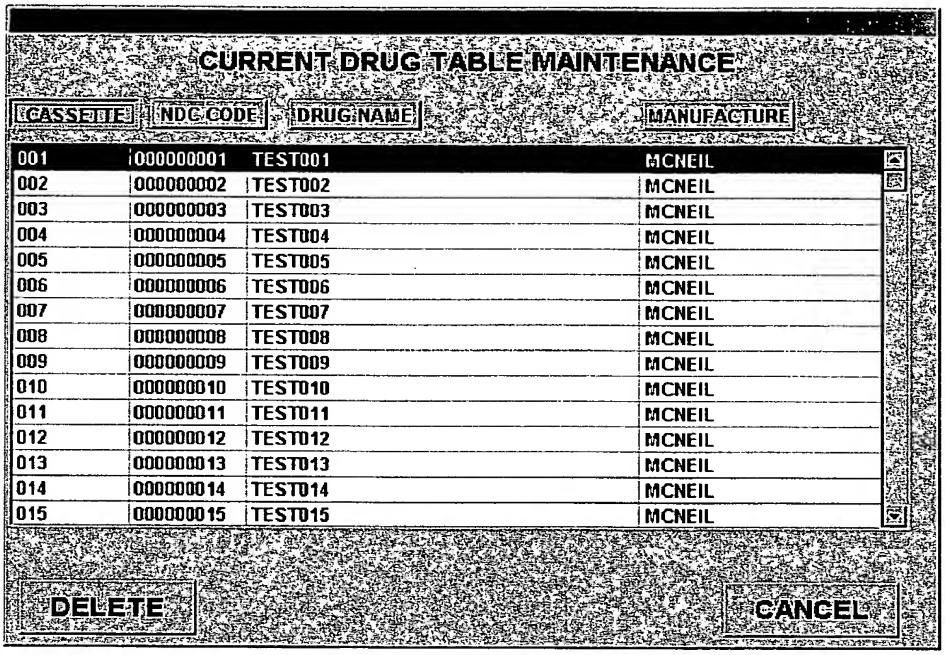
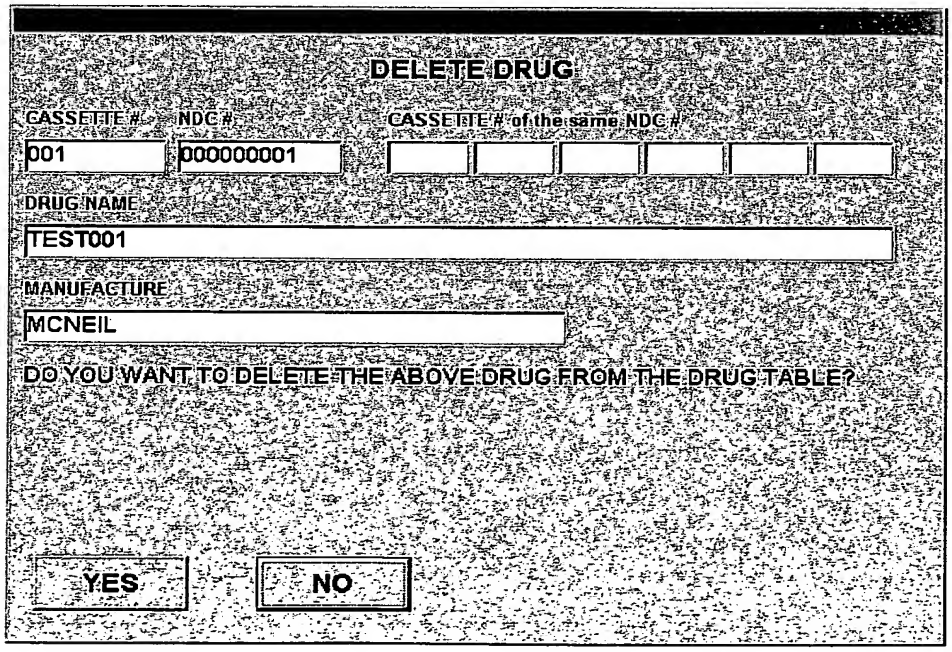


Fig.68 2.1 Deleted drug confirmation screen



BEST AVAILABLE COPY

Fig.69 3.0 Tablet cassette control screen

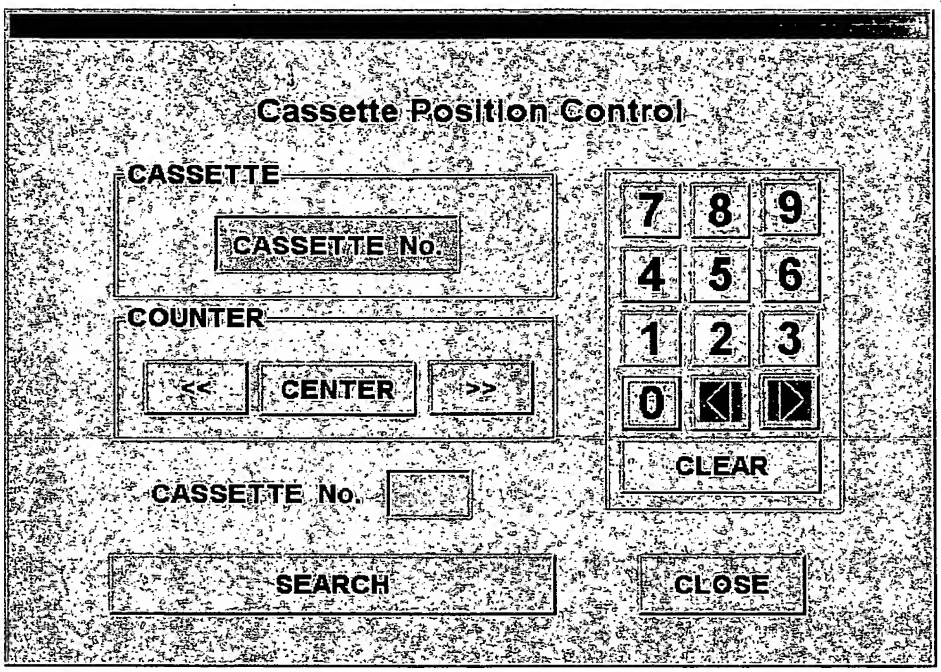
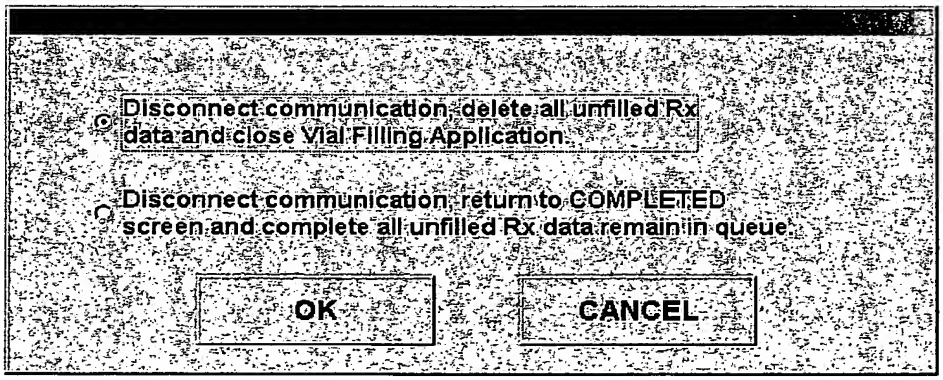


Fig.70 4.0 Host disconnection screen



BEST AVAILABLE COPY

Fig.71

5.0 Date update time setting screen

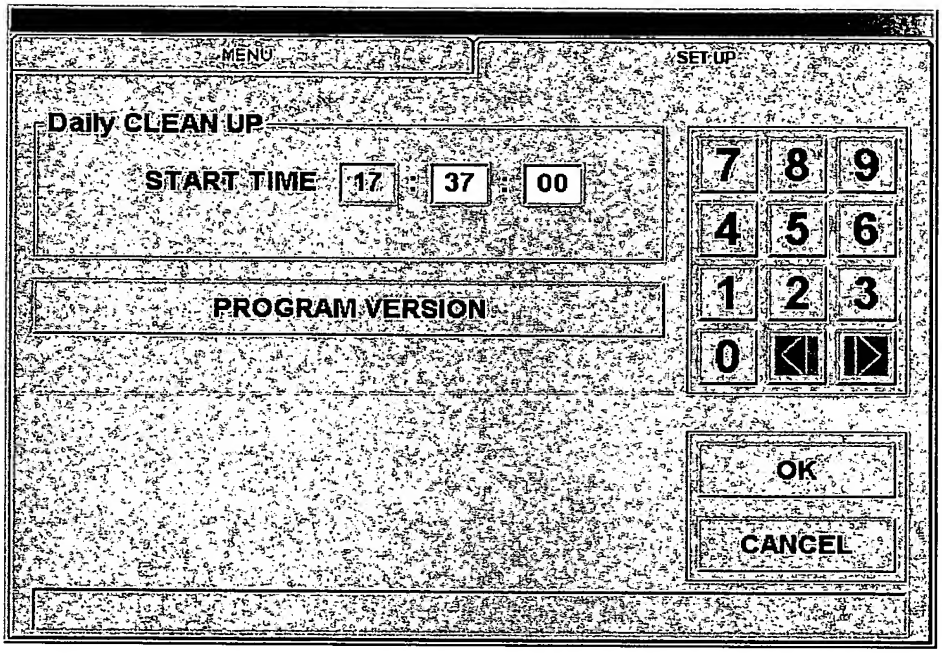
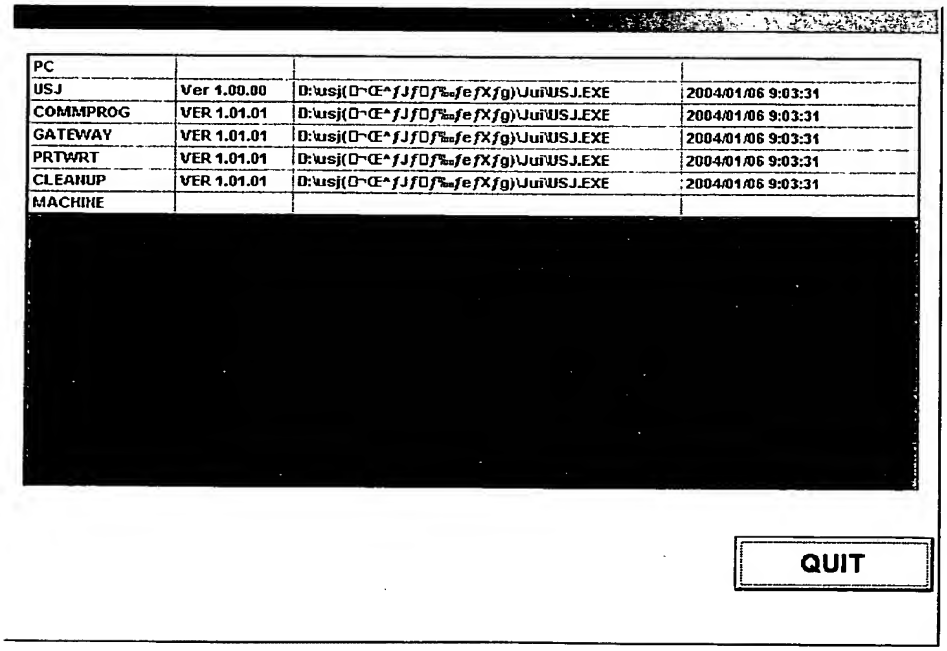


Fig.72

5.1 Program version information display screen



BEST AVAILABLE COPY